

WHY CAN'T WE SLEEP? IMPACT OF RACE AND SOCIAL STATUS ON SLEEP IN COLLEGE
STUDENTS

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A Thesis Submitted in Partial Fulfillment
of the Requirements for the Master of Arts in
The Department of Psychology
Faculty of Arts and Sciences
Rhode Island College

2019

Abstract

This study assessed the impacts of discrimination, microaggressions, and socioeconomic status (SES) on sleep in college students. The study also assessed moderators of racial identity and sleep hygiene as potential buffers of the impact from discrimination.

Method: The impacts of lifetime discrimination and microaggressions over the past six months on sleep over the past month was assessed using an online survey (Study 1), and daily impacts of microaggressions on sleep was assessed from a daily diary study (Study 2). **Results:** The results showed modest correlations for the impact of discrimination, microaggressions, and SES on sleep, with the overall patterns suggesting a detrimental impact on sleep for students of color. The moderators of racial identity and sleep hygiene did not indicate significant effects. **Conclusion:** The impact of discrimination and microaggressions on sleep for students of color is promoting poorer sleep outcomes in comparison to White students. Additionally, higher SES contributed to better sleep outcomes; however, for students of color, higher SES was not shown to buffer the impact of discrimination on sleep outcomes.

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Introduction

Sleep plays a critical role in maintaining both mental and physical health, and sleep problems are associated with decreased psychosocial functioning, healthy behaviors, and self-regulatory abilities (Fuller-Rowell et al., 2017). Sleep problems, specifically in college students are associated with poor performance on critical thinking, reduced awareness of sleep-related impairments, and risk for motor vehicle accidents (comparable to driving while intoxicated) (Kloss et al., 2016). Seventy percent of college students report sleep problems and 60% of college students report poor sleep quality and the use of unhealthy substances, such as alcohol, to alter wake and sleep patterns (Kloss et al., 2016). Nearly half of the American adult population reporting insufficient sleep are between the ages of 18 and 24, which aligns with research indicating that college students are more at risk for chronic insufficient sleep (Peach, Gaultney, & Gray, 2016). Many college students are sacrificing sleep to study or engage in social activities during the week and often use the weekend to oversleep. College students are also using substances like caffeine to keep themselves awake for longer periods, are going to bed feeling stressed or worried, use their bed for things other than sleep or sex, or are going to bed at different times from day to day (Dietrich, Francis-Jimenez, Knibbs, Umali, & Truglio-Londrigan, 2016).

College students who classify themselves as poor sleepers report negative moods and higher levels of stress when compared to those that classify themselves as good

sleepers (Kloss et al. 2016). College students with poor sleep are also more susceptible to depression, suicidal ideation, and physical aggression (Kloss et al., 2016). Sleep deprivation can have a negative impact on cognitive performance which in turn can also negatively impact one's academic performance. Studies have found that college students who are at risk for sleep disorders, due to later wake and rise times and shorter sleep latency (the amount of time it takes to fall asleep); have lower GPAs. However, when optimal sleep quantity and quality are achieved, students' cognitive deficits decrease (Kloss et al., 2016). Previous research has attributed some of the sleep problems found in college students to poor sleep hygiene. Sleep hygiene is defined as practices that promote sufficient sleep such as arousal-related behaviors, sleep scheduling and timing, eating/drinking behaviors, and sleep environment (Peach et al., 2016). Poor sleep hygiene and inadequate sleep is often the result of the many competing demands a college student faces from academics, social pressures, irregular schedules, and newly found independence. Furthermore, students are either unaware or do not realize the importance of good sleep hygiene as a promoter of adequate sleep.

Additionally, research has also found alarming differences in the sleep patterns of people of color when compared to their White counterparts (Fuller-Rowell et al., 2017; Thomas, Bardwell, Ancoli-Israel, & Dimsdale, 2006; Yip, 2015). Specifically, research has shown that African Americans are more likely to have shorter sleep duration, poorer sleep efficiency, greater onset latency, and worse overall sleep quality than White Americans (Fuller-Rowell et al., 2017). Racial discrimination is one factor that potentially explains this relationship. Discrimination, defined as

differential or unfair treatment based on actual or perceived membership in a group (Slopen, Lewis, & Williams, 2016), has a negative impact on psychological outcomes even more so than major life events. Perceived racial discrimination (which will be mentioned as discrimination here on out) is associated with increased sleep disturbances in both adults of color and in college students of color (Slopen et al., 2016; Fuller-Rowell et al., 2017).

Another factor that impacts sleep is socioeconomic status (SES). Individuals of lower SES report shorter sleep duration (the amount of sleep hours), poorer sleep quality, longer sleep latency, more daytime sleepiness, and weekend oversleep in comparison to individuals of higher SES (Jarrin, McGrath, & Quon, 2014). Although SES can be measured objectively and subjectively, both types of measurements have reported associations of poor sleep outcomes for individuals of lower subjective or objective SES. However, objective and subjective SES seem to impact different aspects of sleep, which will be explained in more detail in the Socioeconomic Status section.

Taken together, poor sleep hygiene, discrimination, and low SES are likely to produce poor sleep outcomes putting college students at risk for other mental and physical health issues. Discrimination may be the influential factor for the significant differences found between people of color and White people in sleep research. Therefore, researching the impacts of discrimination on sleep in college students of color is warranted. Because of the differences in stigmas on race, assessing both discrimination and racial identity will allow for a clearer depiction of whether the students are experiencing high rates of poor sleep outcomes and if such an occurrence can be

associated with experiences of discrimination and the stage of one's racial identity. Additionally, assessing other factors of SES and sleep hygiene will provide a more intersectional analysis into how multiple factors can interact and effect sleep outcomes. The following sections will review the research on these factors in more depth and will examine their impacts on sleep.

Racial Discrimination

Discrimination has detrimental effects on a person's well-being by increasing one's exposure to chronic psychosocial stress (Grander et al., 2012). Discrimination is associated with more depressive symptoms, lower self-esteem, increased hopelessness, more loneliness, and increased anxiety (Yip, 2015). Such effects are stronger for adolescents in comparison to adults, for instance, longitudinal research reported that adolescents exposed to incidents of discrimination experienced worse psychological health outcomes over time (Yip, 2015). Discrimination is also an ever-prevalent issue for college students of color and the effects of discrimination can be detrimental to one's health, academics, and overall well-being. In terms of academics, discrimination was related to greater feelings of intellectual incompetence over time among college students (Bernard, Hoggard, & Neblett, 2018). Research also suggests that individuals may make internal attributes or blame themselves in order to make sense of experiences of racial discrimination. In turn, this can lead to a host of other issues such as feelings of depression, anxiety, and decreased self-esteem (Bernard et al., 2018).

One study assessed exposure to racial discrimination and depressive symptoms and surprisingly found that African American college students did not report more

depressive symptoms when they experienced a racial event when compared to a nonracial event (Hoggard, Byrd, & Sellers, 2015). The researchers also found that the African American college students did not appraise racial events and nonracial events differently in regard to how stressful they were and how well they were able to cope. This finding suggests that frequent exposure to racial incidents may become a “normative” daily experience equivalent to the other daily nonracial stressors that they may encounter (Hoggard et al., 2015). Referring to them as “normative” does not mean that their importance is minimized, rather, it is intended to reflect that these experiences are an integral part of the person’s daily experience and thereby produce a consistent, chronic source of stress with its concomitant effects on well-being.

Discrimination and sleep in college students. Research has shown that exposure to discrimination was strongly associated with sleep outcomes in children, adolescents, and adults (Lewis et al., 2013). Slopen, Lewis, and Williams (2016) conducted an extensive review of previous research and found that all studies included in their analysis reported positive associations between discrimination and sleep difficulties. One study found that everyday discrimination was associated with more sleep complaints and was independent of other factors such as financial strain and reported health problems such as depressive symptoms. Six of the studies reported that, although a relation between depressive symptoms and discrimination is well known, the relation between discrimination and sleep was not confounded or mediated by depressive symptoms (Slopen et al., 2016). A longitudinal study, specifically on college students, examined changes in sleep problems over a 1.5-year period in African American and White

American students at a predominately White institution (Fuller-Rowell et al., 2017).

Sleep factors were measured by duration (the amount of sleep hours), latency (the amount of time it takes to fall asleep), efficiency (ratio of total sleep time compared to the amount of time spent in bed), maintenance (staying asleep after initially falling asleep), and sleep quality. Perceived discrimination resulted in changes in sleep problems over time.

Specifically, discrimination was associated with increased sleep duration problems, increased sleep latency, and decreased sleep quality (Fuller-Rowell et al., 2017).

However, given the lack of research specifically within the college population, studies with similar aged populations of adolescents or young adults are also reported here. In one study, discrimination and sleep were assessed in a Mexican-origin adolescent population. Discrimination was related to greater daily stress and lower sleep quality but not related to sleep duration (Zeiders, 2017). Another study assessed sleep as a moderator for other health outcomes and reported that experiences of high discrimination and poor sleep resulted in higher rates of depressive symptoms and lower ratings of self-esteem. However, adolescents who reported high levels of discrimination and high levels of sleep quality reported lower levels of depressive symptoms overtime (Yip, 2015). In addition, adolescents with longer sleep duration and lower levels of discrimination had the lowest levels of internalizing behaviors and adolescents who reported discrimination and had shorter sleep durations had more externalizing behaviors (El-Sheikh, Tu, Saini, Fuller-Rowell, & Buckhalt, 2016). These results suggest that good sleep quality can reduce the detrimental effects of discrimination on health outcomes.

Given the significant effects of racial discrimination on sleep, more research on this relationship is warranted. Previous literature shows the detrimental effects found in children, adolescents, and adult populations but such information is lacking for the college population. It is important to assess this population as poor sleep and experiences with discrimination are prevalent on college campuses. Discrimination on college campuses (or in society) are not always overt and are sometimes subtler. However, even subtle instances of discrimination, known as microaggressions, can have a significant impact on sleep and other health outcomes.

Microaggressions

Microaggressions are defined as verbal, behavioral, and environmental racial slights or insults directed to a person who is a racial/ethnic minority group member (Hollingsworth et al., 2017). A major difference between microaggressions and overt expression of discrimination is that microaggressions often are undetected, dismissed, or excused by the initiator. A well-known example of a microaggression is when a store worker follows a customer of color around the store, a method of racial profiling. The message implicated with this action is that the person of color is going to steal or is a criminal (Sue et al., 2007). Microaggressions are so impactful due to the subtleness of the action in comparison to overt discrimination. A white American “nonracist” person typically views themselves as morally good with beliefs in democracy and equality, but the issue lies in their inability to see their racial biases (Sue et al., 2007). Therefore, when a microaggression occurs and is pointed out by the recipient, the instigator often invalidates their claim indicating that they are not a racist and their action was not

racially motivated. This can leave the recipient with feelings of uncertainty as to whether they overreacted in the situation and if their claims of racial bias are valid (Sue et al., 2007). The six dimensions of racial microaggressions are invisibility (feeling ignored), criminality (stereotyped as a criminal), low-achieving or undesirable culture (incompetent or dysfunctional), sexualized (eroticized) and foreigner or not belonging (viewed as an immigrant and not a “true American”) (Hollingsworth et al., 2017). Research has also indicated that microaggressions are more prevalent to African Americans than any other minority group (Hollingsworth et al., 2017).

Evidence from previous research shows that microaggressions are detrimental for college students. African American college students have reported experiences with microaggressions in classroom or other campus settings by white peers, faculty, administration, and staff. Microaggressions resulted in feelings of invisibility or feeling that one’s unique characteristics were not being acknowledged due to only being conceived as fitting into their racial stereotype (Nadal, Wong, Griffin, Davidoff, & Sriken, 2014). Such feelings can have severe negative impacts to one’s self-esteem. Research has found that when African American male college students are negatively stereotyped as intellectually inferior or as criminals, they feel a sense of isolation which may negatively influence their academic performance (Nadal et al., 2014). College students of color were also more likely to exhibit lower self-esteem when they experienced microaggressions classified as being treated like a second-class citizen or microaggressions that occurred in educational or workplace settings (Nadal et al., 2014). The effects of microaggressions on college students are important to assess because they

seem to be more prevalent than experiences of overt discrimination, often go undetected, and are not seen as harmful by the person initiating the microaggression.

Microaggressions and sleep. Research on microaggressions and sleep is not well established; however, several studies have assessed everyday discrimination which has similar domains as microaggressions. In one study, the microaggressions scale was used to compare the effects of overt discrimination and microaggressions on sleep in Latino and Asian American high school students in the US (Huynh & Gillen-O'Neel, 2016). An inverse relationship was found, such that higher levels of microaggressions was associated with lower sleep duration, but this relationship was not found with overt discrimination. However, the same study found increased exposure to overt discrimination was associated with worse sleep quality (Huynh & Gillen-O'Neel, 2016). The implications of this research draw attention to the possible differential associations amongst overt discrimination and microaggressions, and their impacts on sleep. Another study (Slopen & Williams, 2014) of everyday discrimination and major experiences of discrimination found somewhat opposing results. This study assessed an adult population of Whites, Blacks, and Hispanics and found a positive association between everyday discrimination and sleep problems. An inverse association was found between major experiences of discrimination and sleep duration (Slopen & Williams, 2014). Ong, Cerrada, Lee, and Williams (2017) assessed microaggression experiences in Asian American first year college students and found that daily microaggressions were associated with poorer sleep quality and shorter sleep duration. All three studies reported a significant impact of microaggressions on various ethnic backgrounds but there are

implications that the microaggressions experienced by a particular ethnicity may be different in comparison to another. For instance, African Americans seem to have the most exposure to microaggressions and research shows that 96% of African Americans reported experiences of microaggressions over a one-year period. The majority of these microaggressions entailed being mistaken for a service worker, being ignored, given poor service, treated rudely, or experiencing strangers acting fearful or intimidated when around them. Asian Americans, however, reported being exposed to microaggressions of being a foreigner (Sue et al., 2007). However, research on microaggression does not reflect the prevalence of microaggressions experienced by African Americans as much of the previous research is focused on other marginalized groups. Therefore, research on African Americans and microaggressions is necessary and important in this overall topic and in the assessment of factors impacting sleep outcomes.

Racial Identity

Race and ethnicity are often used interchangeably, but they refer to slightly different concepts (Frale, 1997). Racial classifications are often based on physical appearances such as skin color and hair texture. Ethnicity is often defined by cultural distinctions based on items like language, food, religion, etc. (Frale, 1997). Black can be referred as one's race, but ethnicity can be defined as country of origin like Haiti. Racial identity has been defined as identification with groups of people who have been socialized as belonging to a racial group (Lee & Ahn, 2013). Racial identity is an aspect of one's self concept and can impact racial group membership (Hoggard et al., 2015). Research has shown the importance for people of color to have a strong sense of their

racial identities in order to have a sense of solidarity when faced with instances of discrimination and oppression (Yoon, 2011). Consistent with Erikson's theory of social identity, affirmation is separated from resolution allowing for the development of racial identity for people of color to progress through stages of exploration, affirmation, and resolution (Yoon, 2011). This theory addresses the limitations found in other racial identity theories by acknowledging that positive affirmation is not indicative of an achieved identity and therefore, separating affirmation and resolution as two distinct functions of identity development. Exploration reflects the degree to which a person has investigated issues related to their race/ethnicity, affirmation measures the response to worthiness of belonging to their racial/ethnic group, and resolution reflects the extent to which a person has confirmed what their race/ethnicity means to them (Yetter & Foutch, 2013).

For Black youth the question of 'Who am I' is interconnected with 'Who I am racially and What does it mean to be Black' (Tatum, 2003). In accordance with Cross' model of racial identity, the pre-encounter stage involves behaving in ways that lessen the value of being black in order to fit in with the majority group. In this stage a person will often strive for acceptance from their White counterparts. However, in the immersion/emersion stage the need for acceptance by White counterparts is gone. The person has come to embrace being Black and Black culture and gain a sense of pride from it (Vandiver, Fhagen-Smith, Cokley, Cross, & Worrell, 2001). The transition into the immersion/emersion stage is often assisted by racial socialization which allows a person to have better understanding of their racial identity. The literature suggests that

racial-socialization helps African American children cope with detrimental impacts from experiences of racism (Edmonson Bell & Nkomo, 1998). African American parents use racial-socialization to explain to their children the roles, expectations and cognitive skills and strategies to manage both Black and White cultural contexts. The three components of racial socialization consist of 1) learning to label racism accurately, 2) having models that display appropriate responses to situations 3) understanding the experience (Edmonson Bell & Nkomo, 1998). Racial-socialization prepares African American children to cope with discrimination and racism and seems to give shape to their racial identity. However, racial identity can vary in terms of significance such that some individuals may hold little significance to their race in defining who they are, while others may attribute their race as a core concept in their identity (Sellers, Smith, Shelton, Rowley, & Chavous, 1998).

Previous research reported that individuals who include their racial identity as a central part of their self were more protected from the impact of discrimination in terms of depression and perceived stress (Torres & Ong, 2010). Therefore, studies have assessed whether racial identity could serve as a buffer for the impact of discrimination on sleep, such that someone with a stronger racial identity would be less prone to the detrimental association between experiences of discrimination and sleep. A meta-analysis (Lee & Ahn, 2013), reported findings of Afrocentricity/ racial centrality/ positive regard (the extent to which individuals identify and affiliate with Black culture and people) (Sellers et al., 1998) to be positively related to racial discrimination and negatively associated with psychological distress. In sum, the more affiliation Black Americans had

with their racial identity the more likely they were to perceive experiences of discrimination, but the less likely it was to impact their mental health (Lee & Ahn, 2013).

African American college students reported more depressive symptoms when they experienced a racial event in comparison to a nonracial event (Hoggard et al., 2015). However, college students did not appraise the stressors of the racial event with how taxing the stressor was but how well they were able to cope with the event. The study also found African Americans with high racial centrality, low public regard (beliefs that other groups hold more negative attitudes towards African Americans) or low private regard (the individual holds more negative attitudes about being African American) reported more depressive symptoms on a day before a racial event occurred (Hoggard et al., 2015). Such results could be inferred that African Americans are in a constant state of worry or anticipation of race induced stress (Hoggard et al., 2015). A study with Latino college students reported that racial identity acted as a buffer for internalized racism (acceptance of beliefs indicating that one's own race is inferior to the majority race), such that higher levels of racial identity resulted in lower levels of internalized racism. Additionally, racial identity was positively related to perceived racism, in which an individual with higher associations of racial identity is more likely to perceive racist events (Hipolito-Delgado, 2014). The study will therefore, assess the impact of racial identity on discrimination and how that may moderate sleep outcomes for people of color.

This study will also assess White racial identity which fundamentally differs from the development of a person of color's racial identity due to the inherent privilege and

status associated with being of the White majority. In order for a White person to develop a positive White racial identity they must abandon racism and develop nonracist White identity (Helms, 1990). Janet Helms developed a model depicting the progress of developing a nonracist White identity through the progression of six stages. Contact is the first stage and depicts early development of racial identity in which Whites conform to dominant cultural norms, engage in racist behaviors towards people of color, and an overall unawareness of race, white privilege, and the impact from individual and institutional racism. The second stage, disintegration, involves conscious and conflicted acknowledgement of one's Whiteness. The third stage, reintegration, involves consciously acknowledging one's Whiteness as well as accepting beliefs of White superiority and Black inferiority. The fourth stage, pseudo-independent, involves redefining a positive White Identity, in which one will begin to question whether Blacks are actually innately inferior and will begin to accept the role of Whites in racism. In the last stage, autonomy, a White person develops, racial awareness and awareness of white privilege, cross-racial friendships, abandonment of personal racism, an understanding of the impacts of racism, and engagement in antiracist actions (Helms, 1990; Mallot, Paone, Schaeffle, Cates, & Haizlip, 2014). Individuals who reach the autonomy stage are deemed antiracist and are continually open to new ways of thinking about race and culture (Helms, 1990; Mallott et al., 2014). Antiracist White people have a positive White racial identity and are seen as allies and often challenge other White people's racist beliefs and behaviors (Mallot et al., 2014).

Previous research has shown that the level of White Identity a person has can significantly impact how one sees and functions in the world. For instance, in accordance with Helms' White Identity model, White adults in the reintegration stage have reported fear of people of color and those within the immersion-emersion stage have reported increased levels of guilt (Siegal & Carter, 2013). In another study, White adults deemed to be antiracist perceived that their racial identity development was a lifelong process in which they faced many challenges in trying to align their life choices with antiracist values. Additionally, they felt that by challenging racist behavior and removing racism from their identity allowed them to gain a sense of redemption from being identified as racist and privileged Whites (Mallot et al., 2014). Goren and Plaut (2012) analyzed the association between White racial identity and attitudes towards diversity by considering not only the strength of one's identity but also its form. The researchers looked at Whites in either a power-cognizant stage in which Whites are very aware of their unearned privilege with Whiteness being a structure for restricting the allocation of resources; or prideful in which Whiteness is a sense of pride and is superior to other cultures. The strongly "prideful" participants were associated with most anti-diversity beliefs and more racial bias when compared to the strongly power-cognizant participants. However, there was no difference between the strength of racial identification between the power-cognizant and prideful participants (Goren & Plaut, 2012). The dynamic between type and strength of White racial identity can lead to two differing perspectives in terms of other out-groups and cultures. Therefore, it is important for this study to assess the

implications that White racial identity development can have on a college campus that is most often White-dominated.

Racial identity and sleep. In regard to sleep, one study examined associations between racial identity, discrimination, sleep, and fatigue in African American and White American adults. Individuals (both African Americans and White Americans) who reported more discrimination had less stage four sleep (the beginning of deep sleep) and more physical fatigue (African Americans reported more experiences with discrimination). Racial identity was significantly related to sleep latency indicating that individuals who felt more connected to their racial group showed more difficulty falling asleep (African Americans had a stronger sense of ethnic identity) (Thomas et al., 2006). The implications from this study could be associated with previous research showing that a person of color with high racial identity is more likely to perceive racist events and therefore have a higher prevalence of perceived discrimination. The results can also be associated with previous literature that suggested that African Americans are in a constant state of worry or anticipation of race-induced stress, all of which can impact sleep outcomes. Unfortunately, research assessing one's racial identity, discrimination, and sleep is scarce but the implications from previous racial identity research suggest the importance of including racial identity as a variable when studying the impact of discrimination on sleep.

Research on White racial identity and sleep has not been assessed and, therefore this study will examine whether the effects of White racial identity will depend upon the strength and form of that identity. Having a strong White antiracist identity may be

associated with poorer sleep outcomes as one may feel overwhelmed with guilt and the difficulty of trying to align their non-racist views with life choices. For instance, White participants in the Mallot et al., (2014) study reported difficulty integrating working and living conditions that were not promoted or sustained on racially hierarchical systems which went against their antiracist beliefs. For example, White participants wanted to live in racially diverse neighborhoods but also did not want to be seen as someone gentrifying the neighborhood. The White participants also noted struggling to maintain friendships with other White people who were not attuned to their racial privileges, and also with people of color that questioned their authenticity (Mallot et al., 2014). Therefore, having a strong antiracist White identity may contribute to poorer sleep outcomes in White college students. This aspect of the study is exploratory as it is difficult to predict whether such incidents are pervasive enough to impact sleep outcomes.

Socioeconomic Status

Socio-economic status (SES) is a complex construct involving economic, social, environmental, and behavioral factors that is often defined as a combination of one's income, education, and occupation (Marco, Wolfson, Sparling, & Azuaje, 2011). SES is noted as one's hierarchical economic position in which the lower strata is often associated with greater health risks. *Social class* is defined as economic (income and other material resources), social (people that can be relied on for access to resources), and cultural (beliefs and ways of living that provide additional access to social and economic resources) capital (McDowell et al., 2013). Social class incorporates a number of other factors that are not assessed when measuring SES. However, given the previous research

SES has shown to be a strong predictor for many health outcomes, including sleep. Therefore, measuring SES rather than social class will allow this study to advance previous research by incorporating other factors that might be adding to the effect of SES on sleep.

Previous research showed that adults of lower SES reported more acute and chronic physical pain, mental issues, and poorer quality of life when compared to those of higher SES (Jarrin, McGrath, & Silverstein, 2013). Due to this association of low SES and health issues, it has been proposed that lower SES impacts sleep behaviors which, in turn, negatively impacts one's health. Evidence from previous research has supported this notion and an association between SES and sleep has been found. Although much of the research is focused on children and adolescents rather than college students, the findings are consistent across age populations.

Felden, Leite, Rebelatto, Andrade, and Beltrame (2015) conducted a systematic review of previous research and found that children from low-income households were more likely to have sleep problems such as insomnia and issues initiating or maintaining sleep. Several studies also found a positive association between parental income and sleep duration (Felden, Leite, Rebelatto, Andrade, & Beltrame, 2015). El-Sheikh et al. (2013) assessed which aspects of SES impacted different sleep behaviors in children and found that children with lower parental income had more sleep/wake problems and children with lower parental education had lower sleep efficiency. Parental perceived SES was associated with greater variability in sleep onset and shorter sleep minutes for their children. Additionally, race was a moderator, as African American children's sleep

was more negatively affected by parental income and education than the sleep of White American children (El-Sheikh et al., 2013). Furthermore, lower childhood SES (as measured by parental education) was associated with more time in stage 2 sleep and less time in slow wave sleep (the deepest phase of non-rapid eye movement sleep). Race was also a factor as black participants spent less time in slow wave sleep and reported more subjective sleep complaints than white participants (Tomfohr, Ancoli-Israel, & Dimsdale, 2010). The differences associated with race may be due to exposure to discrimination which, as explained previously, can have a negative impact on sleep behaviors.

One aspect of SES to consider is the use of objective vs. subjective measures. Objective measures of SES entail information such as income, occupation, and education level. The goal of measuring objective SES is to assess one's access to tangible resources (Jarrin et al., 2013). Much of the previous literature focused on objective SES and found associations between lower objective SES and a greater need for sleep, more accumulated sleep debt (not getting enough sleep), and both long and short sleep durations even after factoring for covariates such as age, gender, marital status, and smoking (Jarrin et al., 2013). Parental objective SES also has a significant impact on their children's sleep. Children with lower parental objective SES reported more sleep disturbances and daytime sleepiness (Jarrin et al., 2014).

Subjective SES, which has also been labeled as *subjective social status* or *perceived social position*, is based on an individual's perception of their own rank in the SES hierarchy in comparison to others (Quon & McGrath, 2014). Subjective SES seems to tap into one's perception of their social context and therefore better captures one's

social status. Subjective SES more accurately predicts current physical and mental health and changes in health status when compared to objective SES (Jarrin et al., 2013). Lower subjective SES is associated with prolonged sleep duration, longer sleep latency, and poorer sleep quality (Jarrin et al., 2013). One study that examined the impact of subjective social status and objective social status on sleep in children and adolescents found that the subjective and objective SES impacted different aspects of sleep (Jarrin et al., 2014). Objective parental SES was associated with sleep complaints, whereas subjective SES was associated with sleep quality and daytime sleepiness. Households of lower SES may have inadequate resources and exposure to non-optimal sleeping arrangements, such as noise outside the home, which may induce poor sleep behaviors (Jarrin et al., 2014). Sleep studies with children and young adolescents found similar results of children from families of lower SES reported poorer sleep outcomes (Marco et al., 2011, El-Sheikh et al., 2013). Again, non-optimal sleep arrangements due to an environment not conducive for sleep was referenced as a possible factor for such results. Additionally, the researchers also proposed that because economic well-being is correlated with stress that reduced sleep durations and erratic sleep schedules may be due to stress-induced altercations within the home (El-Sheikh et al., 2013). The inclusion of both subjective and objective measures of SES are important in uncovering the differing effects they impose on sleep outcomes, which will be elaborated momentarily.

SES and sleep. In assessing the impact of SES on sleep among the college student populations, a number of objective and subjective factors can be assessed. In terms of objective measures assessing one's family SES can provide important information into

sleep behaviors. As mentioned previously, parental SES is known to have a significant impact of sleep outcomes on children and adolescents. Subjective measures of SES assess one's perception of SES or social status whether it be their own status or their parent or family's status. Subjective social status measures entail ranking one's social status in comparison to a specific population. A recent meta-analysis conducted by Quon and McGrath (2013), found a significant association of higher subjective SES and better health outcomes. Subjective SES was also found to be the strongest predictor of mental health outcomes in which low subjective SES was associated with poor mental health outcomes (Quon & McGrath, 2013). For college students, comparisons can be examined in terms of family's social status within the American population or the college student's social status among other college students at their institution. For instance, Huynh and Chiang (2016) assessed SES and subjective social status in school and in society amongst Latino American and Asian American high school students. The subjective social status was measured by students' ranking themselves in terms of grades and respect on the school subject social status measure and in terms of their family's education and income on the societal social status measure. The results showed students who perceived their family to have lower SES reported higher levels of stress, restlessness, and sleep problems. Sleep duration was found to be a mediator between societal subjective societal status and somatic symptoms (Huynh & Chiang 2016). Another study on adults aimed to determine whether a subjective SES gradient existed for sleep. The results found a subjective SES gradient in which individuals who ranked themselves to be of a lower status, in comparison to others in their community, reported poorer sleep quality, shorter

sleep duration, longer weekend sleep, and greater daytime sleepiness. When objective SES was controlled for, subjective SES was found to be a stronger predictor of sleep duration, weekend oversleep, and daytime sleepiness (Jarrin et al., 2013). In one study, perceived SES was assessed as a moderator in the relationship between ethnicity and sleep outcomes in college students. The results showed that perceived lower social status was strongly related to poorer sleep quality for Asian and African American students but not for White American students. From these results the researchers proposed that people of color with a low perception of social status experience greater amounts of discrimination and are more sensitive to its effects which can negatively impact sleep (Goodin, McQuire, & Smith, 2010).

The Present Study

Insufficient sleep in the college student population is a growing concern due to its detrimental effects on health and cognitive performance. Research on correcting the sleep problems of college students has been tailored around educating students about good sleep quality and promoting good sleep hygiene. As mentioned previously, sleep hygiene are behaviors that promote sufficient sleep quantity, good sleep quality, and daytime alertness (Peach et al. 2016). Sleep hygiene is modifiable and, unlike exposure to stressful events, it can be more easily controlled and adjusted (Todd & Mullan, 2013). Although good sleep hygiene can promote better sleep behaviors, it may not be sufficient to combat sleep problems due to other factors such as discrimination.

Previous research points to racial discrimination as being detrimental to sleep. Overt discrimination and microaggressions have strong associations with sleep outcomes

as well as other health and social outcomes (Fuller-Rowell et al., 2017, Nadal et al., 2014, Ong, Cerrada, Lee, & Williams, 2017). Both types of discrimination are often found on a college campus where many students of color feel as though they are targeted by their white peers and are also not supported by their administration (Reid & Radhakrishnan, 2003). Campus climate studies report that students of color are more likely to perceive their campus' racial climate more negatively than their white peers. Experiences with racism and discrimination as well as a lack of policies and practices that support diversity initiatives contribute to this finding (Reid & Radhakrishnan, 2003). One study found that racial avoidance is often used when university administrators, faculty, and staff, engage in conversations about a racist event or their campus' racial climate (Cole & Harper, 2017). Instead of labeling a situation as racially motivated and acknowledging that there might be a race issue on that campus, the incident is often deemed an isolated incident that is not representative of the college's mission statement. Rhetoric around the incident often uses broader terms such as alienating or hostile rather than noting the incident as racist or a racial attack. Therefore, by not addressing the racism on campus, the response is often ineffective (Cole & Harper, 2017). In conclusion, the prominence of racial discrimination on college campuses and the lack of support for students makes racial discrimination a necessary factor to assess in terms of sleep behaviors in college students.

In addition to the impact of racial discrimination, the impact of SES is also a necessary factor to assess in the current study. As previous research reported, SES has a strong association with sleep outcomes, such that lower SES is associated with poor sleep outcomes (Goodin et al., 2010). SES measured both objectively and subjectively have

produced strong associations with sleep outcomes. However, research also found these associations to be moderated by race such that, individuals of color have worse sleep outcomes than their white counterparts within the same perceived SES (Goodin et al., 2010). From this implication, we propose that sleep differences found amongst different racial groups, within the same SES, are due to experiences of discrimination. Therefore, we would suspect that a college student of color with low SES would have poorer sleep outcomes in comparison to White students. However, it is also possible that this relationship is buffered by one's racial identity. If a person exhibits high racial identity, they may be less sensitive to the impact of discrimination.

However, we do not suggest that our focus on racial identity means that there is not an interplay of other factors such as gender, sexuality, disability, etc. that can shape a person and their overall identity. The intersectionality framework suggests that individual, interpersonal, and structural levels are inseparable (Shin et al., 2017). The framework does not propose that for each minority status there is an accumulation of disadvantage but rather that there are qualitative differences associated with each status. There are multiple routes of oppression due to the minority statuses associated with a person which can involve characteristics such as race, social class, sexuality, disability, etc. (Shields, 2008). For instance, a person with an intersectional identity of being a woman and being a person of color are often marginalized within both identities and are subjected to intersecting aspects of racism and sexism. However, such experiences are not represented in feminist or antiracist discourse (Crenshaw, 1994). Therefore, researching intersecting identities, especially when related to disparities is necessary.

Intersectionality also notes that power systems have different systems of oppression (e.g. racism, sexism, capitalism) which can vary across nations or states and can impact all areas of one's social life (Collins & Blige, 2016). In such that having multiple identities that are stigmatized like race and socioeconomic status can impact instances with discrimination (Potter et al., 2018). However, being a black, lesbian, woman does not entail that there is an additive impact with having all three of these identities but that these multiple identities cannot be separated out to only study one's experience of being black without the lesbian and woman identities. Such multiple identities will interact creating a complexity of inequalities or privileges experienced (Potter et al., 2018). Therefore, by assessing gender, race, and socioeconomic status, this study is examining a more inclusive depiction of a few of the multiple identities that make up the participants in this study.

This study will assess one's racial identity to determine whether this specific factor in the complexity of identity moderates the magnitude of the effect of discrimination on sleep outcomes. In addition, sleep hygiene may also serve as a buffer for the impact of discrimination and SES on sleep. Good sleep behaviors may lessen the impact that discrimination and SES have on sleep outcomes in such that a college student of color of low SES with good sleep hygiene may have better sleep outcomes than someone of the same race and SES but with poor sleep hygiene. The goals of this study are to assess the conjunctive relationship of discrimination and SES on sleep outcomes and to determine if racial identity and/or sleep hygiene moderate this relationship. The study will measure the impact of discrimination on sleep in terms of overt discrimination

and microaggressions and will also measure the impact of SES in terms of objective and subjective SES. Additionally, this study will also determine if the varying degree of SES and exposure to discrimination has a combined impact on sleep outcomes in college students. The other factors of racial identity and sleep hygiene will be measured as possible moderators in a separate or in a combined impact of discrimination and SES on sleep outcomes. This study advances such research by including factors of discrimination and SES which to our knowledge has not been studied in conjunction yet. Additionally, the inclusion of potential moderators also allows for a more descriptive account of potential buffers for poor sleep outcomes.

I hypothesize that 1) high rates of experiences with discrimination and/ or microaggressions will be associated with poor sleep outcomes for students of color, 2) lower objective and/or subjective SES will be associated with poor sleep outcomes for all students, but I predict that lower subjective SES will have more of a negative impact than lower objective SES, 3) sleep outcomes will be poorer for students with high rates of experiences with discrimination and/or microaggressions and with lower objective and/or subjective SES, 4) high racial identity will moderate the effect of discrimination and sleep by serving as a buffer for students of color but for White students a higher stage of White identity will be attributed to poorer sleep outcomes, 5) good sleep hygiene will serve as a moderator to buffer the impact on sleep in general for all students.

Method

Overview

This research project is divided into two separate studies, Study 1 was an online survey and Study 2 was a quantitative daily diary study. The purpose of conducting two studies was to assess the impact from a more general timeframe and to assess from a more specific daily timeframe. Study focused on the general impact of lifetime experiences of discrimination and experiences of microaggressions over the past six months on sleep within the past month, whereas the daily diary study focused on the impact of daily instances of microaggressions on nightly sleep outcomes. Both studies expanded upon previous research by 1) assessing factors together that have only been studied separately and 2) assessing two different time periods.

Study 1

Measures

Demographics. Demographic questions were included to assess students' current year, length of study at the college, living arrangements (on or off campus and with or without parents), race, age, gender, and major.

Sleep outcomes. Sleep outcomes were measured using the Pittsburg Sleep Quality Index (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). The PSQI is a self-administered 19-item instrument used to measure sleep quality and sleep disturbances over a one-month time period. The sleep domains that are assessed with this instrument are; duration, efficiency, onset latency, quality, sleep disturbances, daytime dysfunction, and use of sleep medication. The instrument has been used in both clinical and

nonclinical samples and has been validated across other populations including college students. Scores range from 0 to 21 with the higher scores representing poorer sleep quality. The PSQI has good internal reliability, stability over time, and good validity (Mastin, Bryson, Corwyn, 2006).

Sleep hygiene. Sleep hygiene was measured using the Sleep Hygiene Index (Mastin et al. 2006). The Sleep Hygiene Index is a 13-item self-administered instrument that assesses the presence of behaviors associated with sleep hygiene. Higher scores indicate more maladaptive sleep hygiene. The Sleep Hygiene Index showed good test-retest reliability and good validity as the index was positively correlated with all associated features of inadequate sleep hygiene (Mastin et al. 2006).

Discrimination. Discrimination was measured by the Perceived Ethnic Discrimination Questionnaire – Community Version (PEDQ-CV) (Brondolo et al., 2005). The PEDQ-CV derived from the Perceived Ethnic Discrimination Questionnaire (PEDQ) (Contrada et al., 2001), is a 34-item self-reported instrument used to assess the frequency of various events of ethnic discrimination across all ethnicities. The PEDQ-CV contains four subscales of discrimination which are: in the media, discrimination against family members, discrimination in different settings, and past week discrimination. All subscales assess frequency and intensity of discrimination and have good internal consistency (Brondolo et al., 2005).

Microaggressions. Microaggressions were measured using the Racial and Ethnic Microaggressions Scale (REMS) (Nadal, 2011). The REMS is a 45-item self-administered instrument that assess experiences with microaggressions over the past six

months. Higher scores indicate more experiences with microaggressions. REMS has six subscales which related to the six dimensions of microaggressions noted previously; assumptions of inferiority, second-class citizen and assumptions of criminality, microinvalidations, exoticism/ assumptions of similarity, environmental microaggressions, workplace/school microaggressions (Nadal et al., 2014). The scale has good reliability and evidence of validity through correlations with other scales such as Racism and Life Experiences Scale-Brief version (Nadal et al., 2014, Nadal 2011). The REMS is also a reliable measure across racial groups of Asian Americans, Latino/a Americans, African Americans, and multiracial people (Nadal, 2011).

Racial Identity. Racial identity was measured using the Ethnic Identity Scale for students of color (EIS) (Umaña-Taylor, Yazedjian, Bamaca-Gomez, 2004). The EIS is a 17-item self-reported measuring assessing three subscales of ethnic/racial identity: exploration, resolution, and affirmation. Higher scores, reported by a four-point Likert scale, represent higher exploration, resolution and affirmation. This scale reports good internal consistency for participants of color with Cronbach's alphas of .88 for exploration, .91 for resolution, and .79 for affirmation (Yoon, 2011). Racial identity for White students was measured with the White Racial Identity and Attitudes Scale (WRIAS) (Helms, 1990) The scale is a 50-item questionnaire containing five subscales: contact, disintegration, reintegration, pseudo-independence, and autonomy. However, to reduce participant burden the measure was reduced to 20 questions. The higher a respondent scores in a subscale the more descriptive they are of that subscale. Each subscale reported good internal reliabilities (Helms, 1990).

Objective SES. Objective SES was measured using the Barratt Simplified Measure of Social Status (BSMSS). The BSMSS was developed based on Hollingshead's measure of social status (Hollingshead, 1957), however, the BSMSS updated the list of occupations to be more relevant for the current society. The updated occupations and the highest level of educational attainment are used to determine each participant's social status (Barratt, 2012).

Subjective SES. Subjective SES was measured using the MacArthur Scale of Subjective Social Status-Youth Version (Adler & Stewart, 2007). This scale assesses family status in the US society as well as individual status in school. The scale uses two 10-rung ladders, one representing the US society and the other representing the school community. Participants are to rank their family's social status in comparison to the US society on the first ladder and then rank their individual social status in comparison to their school community on the second ladder (Goodin et al., 2010). This instrument as show good reliability across studies and a relation to many health outcomes in adolescents (Huynh & Chiang, 2016).

Procedure

Interested participants accessed the study online via a hyperlink which brought them to the study's welcome page and informed consent form in which they had to consent to participate. After the form was signed, participants were asked to provide their email address to prevent a student from taking the survey more than once and allow students to either receive credit for a Psychology course or to be entered into a drawing for an Amazon gift card. The order of the survey differed slightly depending on where the

survey link was accessed. If the survey was accessed via the Psychology participant pool portal the survey order was as follows: PSQI, Sleep Hygiene Index, BSMSS, The MacArthur Scale of Subjective Social Status-Youth Version, PEDQ-CV, REMS, EIS or WRIAS, and then the demographic questions. However, if the survey was accessed by participants not in the Psychology participant pool the demographic questions were presented before the racial identity measures to allow the participant to choose their race and then be presented with the appropriate racial identity scale.

Participants

Study 1 recruited students from a college population via study flyers and emails and from a Psychology participant pool. The demographics of students in the study are reported in Table 1. The participants were 77% female, 14% male, and 5% non-binary with a mean age of 25 years old. Fifty nine percent identified as White, 14% as Black or African American, and 14% as Latinx or Hispanic.

Insert Table 1 here

Results

Descriptive Analyses

The mean scores and standard deviations for the total sample, for students of color, and for White students for all measures in the online survey are presented in Tables 2 through 6. Independent sample t-tests were conducted to test differences between students of color and White students on all measures. For the PSQI, scores of five and above indicate poor sleep outcomes, the total sample mean was 7.9 (SD=3.1), which did

not significantly differ between students of color and White students (see Table 1). The mean score for the Sleep Hygiene Index was 29.4 (SD=6.0), which was indicative of poor sleep hygiene and which did not significantly differ between students of color and White students.

Insert Table 2 here

For the PEDQ, a significant difference was found in the total scores between students of color (M=2.24, SD=1.02) and White students ((M=1.25 SD=0.41); $t(62)=-4.68$, $p=0.000$), indicating that students of color had more lifetime experiences of discrimination. Additionally, as seen in Table 3, all of the subscales of the PEDQ were significantly different between students of color and White students (all p 's < .01).

Insert Table 3 here

Similarly, for the REMS, a significant difference was found in the total score between students of color (M=1.59 SD=0.80) and White students (M=0.43, SD=0.27); $t(62)=-7.12$, $p=0.000$), indicating that students of color had more lifetime experiences of microaggressions. All of the subscales of the REMS resulted in significant differences between students of color and White students, as expected (see Table 4; all p 's < .001).

Insert Table 4 here

For Subjective SES Society, the total sample mean score of 5.40 (out of 10) was similar for both students of color and White students, indicating that most students in the

sample reported being of a middle to low range SES in the context of American society (see Table 5). For the Subjective SES School, the total sample mean of 6.86 (out of 10) was also similar for both students of color and White students, indicating that students in the sample reported being of a mid-range rank in comparison to other students at the college. For the objective SES, the total sample mean score was 40.48 (out of 66), indicating that students were from a moderate social class. Means for students of color ($M= 35.00$ $SD=9.41$) were lower than for White students ($M=43.73$, $SD=9.62$), although this difference was non-significant ($t(53)=3.32$, $p=0.85$).

Insert Table 5 here

For racial identity, different measures were used for students of color and White students; therefore, a comparison of means was not possible. For students of color (see Table 6), scores were highest in the EIS affirmation subscale ($M= 0.73$, $SD= 0.45$) and the EIS exploration subscale ($M= 0.77$, $SD=0.43$). For White students, scores were highest on the WRAIS autonomy subscale ($M=3.95$, $SD=0.42$), the WRAIS contact subscale ($M= 3.15$, $SD=0.80$), and on the WRAIS pseudo-independence subscale ($M=3.76$, $SD=0.47$).

Insert Table 6 here

Hypothesis #1: High rates of discrimination and/or microaggressions will predict poor sleep outcomes for students of color.

Associations for discrimination/microaggressions and sleep were tested with Pearson's correlation coefficients. Such correlations for the total sample were

nonsignificant (see Table 7), which prompted examining whether correlations differed between students of color and White students. This was tested by computing Pearson correlations separately for students of color and for White students, and the two correlations were compared with a z-test. Although these comparisons were all non-significant, they still revealed consistent patterns of differences. As seen in Table 7, there was a weak-to-moderate, correlation of the total PEDQ scores with the PSQI for students of color ($r(21)=0.24$ $p=0.373$); however, this correlation was closer to 0.00 for White students. This finding indicated that experiences of discrimination were more strongly associated with poorer sleep outcomes for students of color only.

Insert Table 7 here

Second, a weak correlation was found for the stigmatization and threat PEDQ subscales for the full sample, indicating that more instances with these types of discrimination were associated with poorer sleep. The stigmatization and threat subscales also differed for students of color vs. White students, although these differences were not significant ($Z_{\text{difference}}=0.94$ and $Z_{\text{difference}}=0.83$, respectively). Specifically, these experiences of discrimination were more strongly associated with poor sleep for students of color than for White students.

For the REMS, there was a weak overall correlation with sleep for the full sample; however, different patterns of results were found for students of color vs. White students (see Table 7). A weak correlation for the REMS total score with the PSQI was found for students of color, indicating that experiences of microaggressions were

associated with poorer sleep outcomes ($r(21)=0.26$, $n=23$, $p=0.280$); however, this correlation was close to zero for White students. The microinvalidation and the inferiority subscales found weak-to-moderate correlations indicating that more instances with these types of microaggressions were associated with poorer sleep for students of color; however, these correlations were near zero for White students ($Z_{\text{difference}}=1.58$ and $Z_{\text{difference}}=1.37$, respectively). Overall, the hypothesis was partially supported by these trends, indicating that students of color who are exposed to more instances of discrimination have poorer sleep outcomes in comparison to White students.

Hypothesis #2: Lower objective or subjective SES will predict poorer sleep outcomes.

Associations among objective and subjective SES and sleep were tested with Pearson's correlation coefficients (see Table 8). The analysis revealed a significant correlation for Subjective SES School and the PSQI for the total sample, indicating that lower Subjective SES School status was associated with poorer sleep outcomes ($r(70)=-0.32$, $p=0.007$). There was no significant difference in this association between students of color and for White students. Subjective SES Society revealed a nonsignificant correlation for the total sample and no significant differences between students of color and White students. For Objective SES, there was no association with the PSQI ($r(60)=0.02$, $p=0.90$). However, the correlations between students of color and White students were significantly different ($Z=3.35$, $p=0.000$), such that students of color and White students displayed correlations in opposite directions. For students of color, higher Objective SES was associated with poorer sleep ($r(18)=0.11$, $p=0.65$), whereas for White students lower Objective SES was associated with poorer sleep ($r(33)=0.13$, $p=0.45$).

Overall, this hypothesis was partially supported such that, for the total sample, lower SES predicted poorer sleep outcomes. However, for students of color higher objective SES also predicted poorer sleep, which was opposite to the prediction.

Insert Table 8 here

Hypothesis #3: The combined impact of discrimination and/or microaggressions and lower SES will predict poorer sleep outcomes.

To test the cumulative impact of discrimination and SES, a multiple linear regression was used with discrimination/microaggressions and SES as the predictors and the PSQI as the criterion variable. The regression models included the main effect of each variable and the interactions between them. Only the total discrimination (and microaggression) scores were used for these analyses because we thought that it provided the best overall test of the impact of discrimination/microaggressions. The total scores provided greater range of variability of scores to test the hypothesis compared to the subscales which had more restricted responses from participants.

Overt discrimination and SES. As seen in Table 9, the interaction between discrimination and *Objective SES* on sleep was nonsignificant for the total sample ($R^2 = 0.03$; $F(3,56)=0.51$ $p=0.68$). Second, the interaction between discrimination and Subjective SES Society on sleep was nonsignificant for the total sample ($R^2=0.02$; $F(3,67)=0.57$ $p=0.64$). Third, the interaction between discrimination and Subjective SES School on sleep was nonsignificant for the total sample ($R^2=0.10$; $F(3,67)=2.57$, $p=0.06$). Since these analyses were nonsignificant for the total sample assessing students of color and White students separately was not necessary.

Insert Table 9 here

Microaggressions and SES. As seen in Table 9, the interactions of microaggressions and *Objective SES* on sleep was nonsignificant for the total sample ($R^2=0.03$; $F(3,54)=0.60$ $p=0.62$). The interactions of microaggressions and *Subjective SES Society* on sleep was nonsignificant for the total sample ($R^2=0.04$; $F(3,65)=0.80$ $p=0.50$). The interactions of microaggressions and *subjective SES school* on sleep was nonsignificant for the total sample ($R^2=0.10$; $F(3,65)=2.45$ $p=0.07$). Since these analyses were nonsignificant for the total sample assessing students of color and White students separately was not necessary. Overall, this hypothesis was not supported as the combined impact of discrimination or microaggressions with SES did not result in significantly worse sleep outcomes for students.

Hypothesis #4: High racial identity will buffer the impact of discrimination on sleep for students of color but for White students a higher stage of White identity will be attributed to poorer sleep outcomes.

The association between racial identity and sleep was tested first using Pearson's correlation coefficients. For students of color (see Table 10), the correlation between the EIS and the PSQI was not significant, although lower scores of racial identity in each subscale were associated with poorer sleep outcomes (affirmation ($r(24)=-0.29$ $p=0.15$), exploration ($r(24)=-0.18$, $p=0.39$), resolution ($r(24)=-0.25$, $p=0.22$). For White students, the WRAIS revealed a significant correlation between sleep and the autonomy ($r(36)=0.357$, $p=0.03$), and reintegration subscales ($r(36)=0.362$, $p=0.03$), indicating that higher scores in these subscales were associated with poorer sleep outcomes.

Insert Table 10 here

To determine whether racial identity served as a buffer against the impact of discrimination on sleep, a multiple linear regression tested the interaction effect of discrimination and racial identity on sleep. To test this interaction, students who scored the highest on the resolution subscale of the EIS and highest on the pseudo-independence and reintegration subscales of the WRAIS were categorized as having a high racial identity and the others were categorized as having a low racial identity. This coding provided an opportunity to examine both students of color and White students in the same analysis, despite there being different measures of racial identity.

As seen in Table 11, the interaction of discrimination and racial identity on sleep was nonsignificant for the total sample ($R^2=0.01$; $F(3,60)=0.45$, $p=0.72$). Testing the interaction effect of discrimination and racial identity for students of color ($R^2=0.94$; $F(3,19)=0.66$, $p=0.59$) and White students ($R^2=0.75$; $F(3,34)=2.0$, $p=0.13$), revealed nonsignificant findings for both groups. A multiple regression analysis was also used to test the interaction effect for microaggressions and racial identity on sleep. This interaction was also nonsignificant for the total sample ($R^2=0.02$; $F(3,60)=0.43$, $p=0.73$), for students of color ($R^2=0.11$; $F(3,19)=0.78$, $p=0.52$), and for White students ($R^2=0.05$; $F(3,29)=0.51$, $p=0.68$). Overall, this hypothesis was not supported as racial identity did not interact with discrimination/microaggressions, with SES on sleep.

Insert Table 11 here

Hypothesis #5: Good sleep hygiene will moderate the impact of discrimination/microaggressions on sleep

To test the cumulative impact of discrimination and sleep hygiene, a multiple linear regression was used with discrimination/microaggressions and sleep hygiene as the predictors and the PSQI as the criterion variable. The regression models included the main effect of each variable and the interactions between them. Only the total discrimination (and microaggression) scores were used for these analyses.

Discrimination and Sleep Hygiene. As seen in Table 12, the interaction of overt discrimination and sleep hygiene on sleep was not significant for the total sample ($R^2=0.09$; $F(3,67)=3.30$ $p=0.02$). The interaction of microaggressions and sleep hygiene on sleep was nonsignificant for the total sample ($R^2=0.13$; $F(3,65)=3.14$ $p=0.03$). Since both analyses were nonsignificant analyses assessing students of color and White students separately were not needed. Overall, this hypothesis was not supported as the combined impact of discrimination or microaggressions with sleep hygiene did not result in significantly worse sleep outcomes for students.

Insert Table 12 here

Study 2

Measures

Participants answered the same demographic questions as in study 1 and reported their daily sleep outcomes, daily sleep hygiene, and daily experiences with microaggressions on a paper diary. The questions used in the daily diary were modified from the original measures used in Study 1, to reflect a daily time period and to shorten the surveys length to reduce the burden of filling out the diary daily.

Procedure

Interested participants scheduled a meeting with the researcher. During the meeting students signed the informed consent form, answered the demographic questionnaire, and were given instructions on how to complete the daily diary. At the conclusion of the meeting the researcher and participant scheduled another meeting in which the survey was returned, and the participant received compensation for participating.

Participants

Study 2 recruited six Black and Latino undergraduate students to participate in a quantitative sleep diary study. As seen in Table 13, two of the six students were male, the rest identified as female. The mean age of the students were 22 years old with the youngest being 19 years old and the oldest being 32 years old. Four of the 6 students lived off-campus with parents, one lived on campus, and one lived off-campus with roommate(s). For student school status, three were seniors, two were of a mid-career level, and one was a first year.

Insert Table 13 here

Results

A General Linear Model approach was used to investigate sleep differences due to daily experiences with microaggressions. With this diary study, multi-level data from each participant and from sampled days from each participant was collected creating the issue of data points that were not independent, which violates assumptions of parametric analyses. Therefore, the General Linear Model controlled for the multiple reports per person.

Descriptive Analyses

The six participants in this portion of the study on average slept for 8 hours and 24 minutes and it took an average of 16 minutes to fall asleep. Over the course of the 7-day period, participants reported 42 experiences with microaggressions. One microaggression per day was the most common (reported on 45% of the days), two microaggressions per day occurred on about 24% of the days, three microaggressions per day occurred on 19% of the days, and the maximum experienced was four microaggressions which occurred on 5% of the days. The microaggression types of *being treated as exotic* and *assumed similarity* were most frequently experienced by participants with 6 instances of each. Additionally, the *environmental* microaggression which is reversed coded was only reported 6 times indicating that there were 36 instances where a participant did not see someone of their race being represented in a positive light.

Impact on Sleep

The first set of analyses assessed sleep latency (time it took participants to fall asleep) as the sleep outcome (see Table 14). A total number of the type of

microaggressions experienced each day was calculated and entered as the predictor variable. The total number of microaggressions experienced did not have a significant impact on sleep latency [$F(4,30)=0.49$, $p=0.74$, partial $\eta^2=0.06$].

Insert Table 14 here

Next, each type of microaggression was assessed separately to determine their impact on sleep latency (see Table 15). Two types of microaggressions, *surprised at success* and *being treated as exotic*, were associated with longer sleep latencies. The *surprised at success* microaggression resulted in a ten-minute difference indicating that, on days when this type of microaggression was experienced, participants were estimated to take an average of ten minutes longer to fall asleep, although this effect was not significant [$F(1,33)=2.01$, $p=0.17$, partial $\eta^2=0.06$]. The microaggression of *being treated as exotic* also displayed a 16-minute longer sleep latency time, although this was not statistically significant [$F(1,33)=1.36$, $p=0.25$, partial $\eta^2=0.04$]. The “*Workplace microaggression*” displayed a reverse effect such that students fell asleep 11 minutes faster after experiences with this type of microaggression [$F(1,33)=1.71$, $p=0.20$, partial $\eta^2=0.05$]. Finally, the school microaggression reported an effect of 12 minutes longer to fall asleep which was not significant [$F(1,33)=1.31$, $p=0.26$, partial $\eta^2=0.04$]. Although these differences were not statistically significant, the potential impact of repeated 10-15 minutes loss of sleep across multiple nights may create a cumulative sleep loss, which will be addressed further in the Discussion section.

Insert Table 15 here

The impact of microaggressions on estimated sleep duration was also assessed and are displayed in Table 16. A higher number of microaggressions in total was associated with reduced sleep duration [$F(4,25)=1.08$, $p=0.39$, partial $\eta^2=0.15$].

Insert Table 16 here

When looking at specific microaggressions (see Table 17), the *surprised at success* microaggression was associated with about a three hours less sleep duration in comparison to when this microaggression was not experienced [$F(1,28)=4.30$, $p=0.05$, partial $\eta^2=0.13$]. For the *colorblind* microaggression, a reverse effect was reported indicating that participants who experienced this type of microaggression slept about two hours more [$F(1,28)=0.51$, $p=.048$, partial $\eta^2=0.02$]. The *treated as exotic* microaggression was associated with significant deficits in sleep duration [$F(1,28)=19.19$, $p=0.000$, partial $\eta^2=0.41$]. [NOTE: the estimation of means with a small number of data points produced a statistical artifact which resulted in an estimated negative amount of sleep, which is not possible and is uninterpretable; consequently, and we will not discuss this finding further]. The microaggression of *assumed similarity* was associated with a two hour decrease in sleep duration [$F(1,28)=1.59$, $p=0.22$, partial $\eta^2=0.05$] and *workplace microaggressions* reported a reverse effect indicating that this type of microaggression resulted in about three more hours of time asleep [$F(1,28)=2.85$,

$p=0.10$, partial $\eta^2=0.09$]. Overall, the general patterns of these findings are in the direction of the hypothesis that microaggressions would be associated with poorer sleep.

Insert Table 17 here

Discussion

This study examined how racial discrimination, along with low SES, impacted sleep outcomes in a college student population. Overall, in the survey study, the sleep outcomes as measured by the PSQI did not significantly differ for students of color and White students. However, both groups showed poor sleep outcomes and poor sleep hygiene. All students displayed an association between discrimination (both overt discrimination and microaggression) and poor sleep. However, these associations were stronger for students of color than for White students, indicating that discrimination had a greater impact on sleep for students of color. Instances of discrimination and microaggressions were also reported more frequently by students of color and, therefore, these trends suggest that discrimination may play a bigger role in exacerbating sleep outcomes for students of color. Additionally, the PEDQ was assessing lifetime experiences of discrimination and the REMS was assessing past six months experiences, whereas the PSQI was assessing sleep over the past month. Therefore, it is possible that some experiences with discrimination and/or microaggressions can have a lasting effect on sleep. As noted from previous research, the impact of both discrimination and microaggressions -- especially in adolescence -- can result in worse psychological health overtime (Yip, 2015). Research also indicates that everyday discrimination is associated

with sleep difficulties which is independent of financial strains and physical and mental health problems (Slopen et al., 2016). The trends found in this study align with such findings indicating that the impact on sleep is still detrimental for students of color regardless of when the experience with the discrimination or microaggression may have occurred.

Regarding SES, students in our sample were of low to moderate SES as measured both objectively and subjectively. Students ranked themselves higher for their status in school than their status in American society, suggesting that students may feel more similar to their college schoolmates in an academic setting than to society in general. A major difference between students of color and White students is that, for students of color, higher SES was associated with poorer sleep outcomes. Although this finding was not significant, it seems to illustrate that an increase in SES does not always protect one from poorer sleep outcomes, and perhaps discrimination has more impact on sleep outcomes for students of color than other factors like SES. This supports the notion that racial discrimination is contingent on one's race and is therefore constant throughout one's life. Something that is more fluid to change, like SES, may still not allow a person of color to engage in better sleep outcomes due to the ever-prevalent experiences with discrimination due to their race. For White students, higher objective SES was attributed to better sleep outcomes which aligns with previous research indicating that having limited resources can impact sleep and sleep hygiene and therefore promote poorer sleep outcomes.

For both students of color and White students, having higher school status was associated with better sleep, indicating the importance of having a sense of belongingness and seeing oneself as of a similar academic status to their classmates. This finding hints at the importance of belongingness in terms of having a more enjoyable college experience which may promote better sleep outcomes. Conversely, if a student does not see themselves as similar or even of a higher status in comparison to most of their classmates then they may be more likely to not enjoy their college experience and more likely to have poorer sleep outcomes. Additionally, the college experience for students of color is often associated with instances of microaggressions and discrimination which can cause one to not enjoy their experience even if they have academic success. However, previous research has found that having a sense of school belonging can buffer the impact of overt discrimination on sleep in adolescents which hints at the importance of being well-adjusted in an academic climate (Huynh, 2013).

Racial identity for students of color and for White students was assessed with two different scales which prevented the comparison of racial identity status between these two groups. Students of color scored higher on the affirmation and resolution subscales whereas White students scored higher in the autonomy, contact, and pseudo-independence subscales. For students of color, higher scores on all of the subscales of the EIS was associated with better sleep outcomes. This suggests that for students of color, having or beginning to establish a positive racial identity can be beneficial for sleep outcomes. As noted in previous research establishing a positive racial identity has many benefits of which is buffering the impact of discrimination. However, along with

this buffering effect, high racial identity is also associated with being more aware of subtle instances of discrimination (Lee & Ahn, 2013). Conversely, for White students, having or beginning to establish a White racial identity was associated with poorer sleep. The autonomy and reintegration subscales were the only two significantly correlated with sleep, suggesting that White students in two different developmental stages may experience similar sleep outcomes. White students who are either completely unaware of their White privilege and engage in racist behavior (high scores in the autonomy subscale), have similar poor sleep outcomes with White students who acknowledge their White privilege and engage in antiracist behaviors (high scores in the reintegration subscale). One interpretation of this finding is that the actions and beliefs associated with the autonomy stage are deemed immoral by the larger society making it harder for a person to fully engage and support such behaviors and making a person question whether they should be proud of their Whiteness and the belief of superiority. In the reintegration stage, there is a constant reminder of how unjust many situations are for people of color and how systemically White people are the root of such injustices forcing a White person in this stage to feel guilty for the privilege afforded to them at birth. As noted in previous qualitative research, White participants who self-identified as being antiracist reported more instance of guilt and feelings of empathy for systematic oppression place of people of color (Mallot et al., 2014).

The interactions among these variables, although not significant, showed interesting trends between students of color and White students. The interactions between discrimination or microaggressions and sleep hygiene were not significant suggesting that

sleep hygiene may not promote better sleep after enduring instances of discrimination and/or microaggressions. This provides an interesting caveat as much of the sleep interventions are focused on promoting better sleep hygiene practices. However, if sleep hygiene does not have an effect on sleep outcomes when discrimination is experienced then people of color will not benefit from such interventions. Although this implication requires more research it suggests that the current ways of addressing sleep problems, especially within college students, is not beneficial for all students.

Additionally, for students of color, the interaction between discrimination and racial identity was indicative of better sleep outcomes and for White students it was indicative of poorer sleep. Therefore, for students of color, it is perhaps beneficial to develop a racial identity in order to reduce the impact of lifetime discrimination on sleep. For White students who do not experience discrimination, it appears that racial identity is mostly attributing to the poorer sleep outcome in this analysis. However, the opposite was found for the interaction of microaggressions and racial identity, which resulted in poorer sleep outcomes for students of color and better sleep outcomes for White students. For students of color, microaggressions can sometimes be more detrimental than overt discrimination because of the subtleness of microaggressions and the inability of others to see how such a behavior is racist. Because of this, students of color may be more impacted by microaggressions because there is less support and validation of these actions being racist. This may be why racial identity is unable to lessen the impact as it does with discrimination on sleep outcomes. However, for White students the implications from this interaction is less clear but perhaps since White students

experience few, if any, instances of microaggressions, this interaction may be more representative of sampling error.

For the diary study, the results demonstrated the impact of daily experiences with microaggressions on sleep. For sleep latency, the majority of the microaggressions were associated with small increases to the time it takes to fall asleep. However, if microaggressions occur frequently, these small impacts can accumulate to have a greater impact on sleep over time. For instance, being treated as exotic resulted in a 16-minute increase in sleep latency, which could accumulate to 112 minutes (i.e., 1.8 hours) over a seven-day span. Therefore, although these small effects do not seem to be very impactful initially, they can result in a cumulative impact over time that can be detrimental to sleep. Specifically, for college students, this cumulative impact can be costly over an academic semester as losing over an hour of sleep in one week can exacerbate sleep outcomes resulting in a decline in academic performance. Additionally, the cumulative impact on sleep duration can also be very costly for college students. For instance, the *surprise at success* microaggression was associated with about three hours less in sleep duration. Therefore, if a college student is already being exposed to poor sleep hygiene and is sleeping less due to the demands of college academics, this additional impact can cause a student to experience even worse sleep outcomes. As mentioned previously, 70% of college students report sleep problems, putting them at risk for more chronic insufficient sleep (Kloss et al., 2016). Therefore, experiencing instances of daily microaggressions is an added factor that heightens the risk of chronic sleep problems and other health and academic problems for students of color.

The “workplace” microaggressions resulted in a reverse effect for both sleep latency and sleep duration, indicating that experiences of this microaggression was associated with less sleep latency and more sleep duration. An interpretation of this is speculative; however, it may be the case that experiencing microaggressions at work can be a daunting event that could occur frequently, especially in the public service-oriented types of jobs that college students are likely to have. Examples of these types of jobs are waiting tables, cashiers for retail, administration assistants, child care workers, etc., which can be both physically and mentally demanding due to working with various types of clientele. Therefore, the demands associated with these types of jobs may produce fatigue which may increase with experiences of discrimination and microaggressions. However, given this is a post hoc interpretation other interpretations may also be valid which warrants additional research into this topic.

Overall, this diary study was exploratory and examined instances of microaggressions and the impact on sleep in a small sample (n=6) over a 7-day period. The findings from this study suggest that daily microaggressions may have an immediate impact on sleep and that the cumulative impact may significantly exacerbate sleep outcomes in college students of color. However, more research on the daily impacts of discrimination and microaggressions is warranted.

Overall, this research assessed discrimination and microaggressions in terms of lifetime experiences (Study 1) and at a daily level (Study 2). Both studies reported findings that supported the hypothesis of discrimination and microaggressions having a negative impact on sleep particularly for students of color. Findings also suggested

different effects for racial identity and SES on sleep for students of color and White students. The differences support previous research indicating that people of color are subjected to much worse sleep outcomes in comparison to their white counterparts. One limitation of this research for both studies was the sample size. The total sample size analyzed for the survey study was 72 participants. However, when separating this into groups for students of color and White students both groups were small, and the group of White students was larger than the group for students of color. Because of the sample size, the power of the analyses was impacted which suggests that perhaps with a larger sample size more of these trends may have been significant. For Study 2, six students of color completed the diaries also impacting the level of power attained. Therefore, for future studies recruitment of larger sample sizes are warranted.

Another limitation of this research is the lack of participants identifying as Black or African American. For Study 1, the majority of the students of color identified as Latinx/Hispanic followed by Black/ African American. For Study 2, only 2 of 6 participants identified as Black and the other four identified as Latinx. As previous research has shown, Black Americans experience worse sleep outcomes in comparison to White Americans and other Americans of color. Additionally, Black Americans also experience different types of microaggression which may have a different or, perhaps, a larger impact on sleep. Therefore, future research should attempt to sample more Black participants as the impact of discrimination and microaggressions may be more influential for this group.

Although both studies have limitations, both studies assessed a rather novel topic by looking into different types of discrimination, SES, racial identity and sleep hygiene on sleep outcomes. Previous research has not assessed all of these factors in one study to determine the cumulative impact on sleep. Additionally, previous research has also not assessed the impact of microaggressions on sleep at a daily level. The findings from both studies highlight a need to further research this topic as the concept of poor sleep outcomes in college students is an unsettling reality. In order to combat this issue, we must first understand the factors that contribute to such poor sleep outcomes. As previous research has shown, the effects of poor sleep are detrimental across the spectrum of age which can greatly increase one's health risks.

Therefore, the findings of this study are necessary and important in beginning to uncover factors that not only impact sleep in college students but could potentially put students at risk in terms of physical and mental health and could serve as an additional and unnecessary barrier in advancing their education. Most students of color are already at a disadvantage when beginning college whether it be a financial disadvantage or a social disadvantage (especially for first-generation college students) and poor sleep outcomes seems to add additional barrier for such students. Therefore, in order to ensure that all students have the opportunity to be successful, understanding why college students of color, especially black students, have poor sleep outcomes is a priority.

Author's Reflection

As common practice in qualitative research, reflexivity is an awareness of the influence a researcher can have on their qualitative study as well as understanding how

the research experience impacts the researcher (Probst, 2015). However, although less common, reflexivity is also important to assess in quantitative research because although the nature of the study differs the researcher cannot completely disconnect from the study and the circular relationship of influencing and being influenced by the topic. Therefore, I provide my personal reflections from conducting this study.

As a Black and Native American woman and the researcher of this study I understood how my race and previous experiences from being a person of color influenced how I wanted to conduct this study and the interpretations made of the results. Being a descendent of two marginalized groups I not only understood but could relate to majority of the types of discrimination encountered by students of color in this study. I also knew how such experiences with discrimination could be extremely belittling and could stick with someone over time. I have dealt with the feelings of anger and pain when seeing my race depicted negatively and stereotypically in movies or even as a mascot for a number of sports team of varying levels from instructional to professional. I can also recount numerous experiences with discrimination some of which I still think about. However, I never considered how discrimination could impact one's sleep but due to previous experiences I could definitely see how the two could be strongly correlated. This became the basis of my study which developed into the assessment of several other variables and timepoints.

It was also important for me to focus my study on people of color who have historically been left out in psychological research. It is disheartening to see how many studies report low racial diversity in their sample. Specific to this topic, many sleep

studies or sleep interventions involving college students do not recruit a racially diverse sample making one question whether the implications from their results are actually generalizable to students of color given these other experiences they have to deal with. Because of this I deliberately recruited people of color for the study and restricted Study 2 to only include participants that identified as Black or Latinx. These decisions were justified from previous literature which provided evidence of people of color having worse sleep outcomes than their White counterparts. White participants were initially included only as a comparison group but some of the results specific to this group required unique interpretations separate from students of color. However, I sometimes felt that by choosing to focus on the variables that impacted White students and providing explanations for such results, I was shifting the focus away from the students of color and perhaps diluting the importance of other implications. Specifically, I felt less inclined to discuss the impact of having a racist White identity on sleep because I did not want to bring awareness to why racists have poorer sleep outcomes. However, from a researcher's perspective I understood the importance of providing interpretations of such results and I think it provided new context that those exhibiting racist behavior may also be impacted by their very egregious behaviors.

Finally, because I could directly relate to the instances with discrimination, I felt more comfortable with interpreting the results. I could reflect and understand what students of color were experiencing and connect that to what the results were showing. However, because of this I was also concerned about having students of color reflect upon such instances with discrimination as I know how triggering and emotional, they

can be. On the other hand, by having White students take the discrimination questionnaires, I wanted to reveal to these students 1) that they haven't experienced most if any of these types of discrimination and 2) what students of color and people of color experience and have to cope with on a regular basis. I considered this study to be necessary and important to spark conversations and bring some awareness to this topic. It is my hope to continue researching and bringing attention to racial disparities in various disciplines and in health outcomes.

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Tables

Table 1.

Study 1 Demographics

	Total sample	Students of color	White Students
Gender (n)			
<i>Female</i>	50	19	7
<i>Male</i>	9	1	28
<i>Non-binary</i>	3	3	0
<i>Other, not listed</i>	2	0	2
<i>Decline to answer</i>	1	0	1
Age (M, (SD))	25.06 (7.48)	25.26 (7.61)	25.09 (7.76)
College Status (n)			
<i>First year</i>	13	7	6
<i>Mid-Career</i>	21	7	10
<i>Senior</i>	27	8	19
Living arrangements (n)			
<i>On-campus</i>	12	5	7
<i>Off-campus with parents</i>	28	11	15
<i>Off-campus with roommates</i>	3	0	3
<i>Off-campus with spouse, partner, children</i>	16	6	8
<i>Off-campus alone</i>	4	0	4

<i>Other</i>	3	1	1
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Table 2.

Mean Scores for Sleep Outcomes

	Total	Students of Color	White Students	t-Test
PSQI				-0.03
Mean	7.9	8.00	7.97	
SD	3.1	2.67	3.23	
n	73	26	38	
Sleep Hygiene Index				0.35
Mean	29.4	28.96	29.45	
SD	6.0	5.72	5.83	
n	73	26	38	

Table note: the t-tests are all nonsignificant, $p > 0.05$.

Table 3.

Mean scores for PEDQ

	Total	Students of Color	White Students	t-Test
PEDQ Global Score				-4.68***
Mean	1.68	2.24	1.25	
SD	0.85	1.02	0.41	
n	71	26	38	
<i>PEDQ Exclusion</i>				-4.58**
Mean	1.80	2.41	1.32	
SD	0.97	1.12	0.56	
n	71	26	38	
<i>PEDQ Stigmatization</i>				-4.09***
Mean	1.69	2.3	1.24	
SD	1.07	1.35	0.52	
n	70	26	38	
<i>PEDQ Work/School</i>				-5.11***
Mean	1.87	2.51	1.32	
SD	1.04	1.11	0.53	
n	70	26	38	
<i>PEDQ Threat</i>				-2.31***
Mean	1.34	1.58	1.14	

SD	0.70	0.96	0.32
n	70	26	38

Table note: *** $p < 0.001$

Table 4.

Mean Scores for Microaggression

	Total	Students of Color	White Students	t-Test
REMS Global Score				-7.12***
Mean	0.88	1.59	0.43	
SD	0.77	0.80	0.27	
n	69	26	38	
<i>REMS Inferiority</i>				-4.31***
Mean	0.54	1.09	0.16	
SD	0.83	1.07	0.28	
n	69	26	38	
<i>REMS Second Class Citizen</i>				-3.29***
Mean	0.32	0.76	0.04	
SD	0.76	1.10	0.15	
n	69	26	38	
<i>REMS Microinvalidation</i>				-2.48***
Mean	0.75	1.15	0.47	
SD	0.97	1.32	0.52	
n	69	26	38	
<i>REMS Exotic</i>				-5.02***
Mean	0.84	1.61	0.39	

SD	1.02	1.16	0.53
n	69	26	38
<i>REMS Environmental</i>			-8.14*
Mean	2.62	4.08	1.47
SD	1.87	0.91	1.61
n	66	26	37
<i>REMS Workplace/School</i>			-4.33***
Mean	0.36	0.83	0.06
SD	0.77	1.08	0.19
n	69	26	38

Table note: * $p < .05$; *** $p < .001$

Table 5.

Mean Scores for Socioeconomic Status

	Total	Students of Color	White Students	t-Test
Subjective SES, Society				1.13
Mean	5.40	5.27	5.74	
SD	1.65	1.66	1.61	
n	72	26	38	
Subjective SES, School				0.91
Mean	6.86	6.58	7.05	
SD	2.00	2.21	1.94	
n	72	26	38	
Objective SES				3.32
Mean	40.48	35.00	43.73	
SD	10.13	9.41	9.62	
n	60	22	33	

Table note: all t's nonsignificant, p's > .05

Table 6.

Mean (SD) Scores for Racial Identity

	Students of Color (n = 26)	White Students (n=38)
EIS Affirmation	0.73 (0.45)	n/a
EIS Exploration	0.38 (0.50)	n/a
EIS Resolution	0.77 (0.43)	n/a
WRAIS Autonomy	n/a	3.95 (0.42)
WRAIS Contact	n/a	3.15 (0.80)
WRAIS Disintegration	n/a	1.71 (0.68)
WRAIS Pseudo Independence	n/a	3.76 (0.47)
WRAIS Reintegration	n/a	1.86 (0.79)

Table 7.

Correlations between Sleep and Overt and Subtle Discrimination

	Total	Students	White	Z
	sample	of Color	Students	difference
PEDQ Global Score	0.14	0.24	0.04	0.78
<i>PEDQ Exclusion</i>	0.12	0.16	0.02	0.52
<i>PEDQ Stigmatization</i>	0.22	0.34	0.10	0.94
<i>PEDQ Work/School</i>	0.14	0.14	0.03	0.43
<i>PEDQ Threat</i>	0.06	0.22	0.00	0.83
REMS Global Score	0.15	0.26	0.05	0.80
<i>REMS Inferiority</i>	0.14	0.24	-0.12	1.37
<i>REMS Second Class Citizen</i>	0.08	0.17	0.11	0.22
<i>REMS Microinvalidation</i>	0.16	0.35	-0.06	1.58
<i>REMS Exotic</i>	0.12	0.12	0.08	0.18
<i>REMS Environmental</i>	0.06	-0.15	0.07	-0.83
<i>REMS Workplace/School</i>	0.18	0.30	0.01	1.10

Table note: all Z-tests are nonsignificant, $p > .05$

Table 8.

Correlations between Sleep and Objective and Subjective SES

	Total	Students	White	Z
		of Color	Students	difference
Objective SES	-.022	0.11	-0.72	3.35***
Subjective SES, Society	-0.11	-0.17	-0.14	-0.11
Subjective SES, School	-0.32**	-0.31	-0.27	-0.16

Table note: ***p < .001

Table 9.

Multiple regression interaction effects of Discrimination and SES

	Objective SES	Subjective SES Society	Subjective SES School
<i>Interaction of Discrimination and SES</i>			
Constant	8.89	7.83	11.43
Discrimination	-0.58	0.56	-0.11
SES	-0.05	-0.11	-0.57
Discrimination * SES	0.03	-0.03	0.06
<i>Interaction of Microaggressions and SES</i>			
Constant	7.05	7.67	10.34
Microaggressions	0.59	1.35	0.71
SES	0.01	-0.11	-0.38
Microaggressions *			
SES	0.00	-0.18	-0.07

All interactions are nonsignificant.

Table 10.

Correlations between Racial Identity and Sleep

	Students of Color	White Students
EIS Affirmation	-0.29	n/a
EIS Exploration	-0.18	n/a
EIS Resolution	-0.25	n/a
WRAIS Autonomy	n/a	0.36 *
WRAIS Contact	n/a	0.14
WRAIS Disintegration	n/a	0.20
WRAIS Pseudo-Independence	n/a	0.14
WRAIS Reintegration	n/a	0.36 *

Table note: * $p < .05$

Table 11.

Interaction of Discrimination and Racial Identity

Discrimination & Racial Identity	Total	Students of Color	White Students
Constant	6.93	7.60	8.14
Discrimination	0.67	0.65	-0.40
Racial Identity	1.16	-0.00	-7.45
Discrimination*Racial Identity	-0.67	-0.52	7.92

Interaction of Microaggressions and Racial Identity

Microaggressions & Racial Identity	Total	Students of Color	White Students
Constant	7.44	9.35	7.73
Microaggression	0.75	0.07	-0.20
Racial Identity	0.73	-2.61	12.96
Microaggression*Racial Identity	-0.81	0.69	-14.72

Table note: all interactions are nonsignificant, $p > .05$

Table 12.

Regression Results for Interaction of Discrimination and Sleep Hygiene

	Unstandardized regression coefficient
Constant	6.86
Discrimination	3.19
Sleep Hygiene	0.05
Discrimination*Sleep Hygiene	-0.12

Interaction of Microaggressions and Sleep Hygiene

	Unstandardized regression coefficient
Constant	11.25
Microaggressions	1.93
Sleep Hygiene	-0.12
Microaggressions*Sleep Hygiene	-0.06

Table note: Interactions are nonsignificant, $p > .05$.

Table 13.

Study 2 Demographics

	Total Sample
Gender (n)	
<i>Female</i>	4
<i>Male</i>	2
Age (M)	
	22.20 (5.00)
College Status (n)	
<i>First year</i>	1
<i>Mid-Career</i>	2
<i>Senior</i>	3
Living arrangements (n)	
<i>On-campus</i>	1
<i>Off-campus with parents</i>	4
<i>Off-campus with roommates</i>	1

Table 14.

Means for Microaggression frequency for Total Sleep Latency in Minutes

	Mean	SD
No occurrences	13.80	9.66
One occurrence	15.20	3.81
Two occurrences	14.35	4.80
Three occurrences	19.16	5.91
Four occurrences	31.71	11.52

Table 15.

Mean for Time to fall asleep in Minutes

	Mean for Yes	Mean for No	Partial η^2
<i>Assumed inferiority</i>	16.18	16.58	0.00
<i>Surprised at success</i>	25.51	15.54	0.06
<i>Second class citizen</i>	18.41	16.27	0.00
<i>Assumed criminality</i>	4.47	16.87	0.02
<i>Colorblind</i>	9.21	16.71	0.00
<i>Invalidated</i>	10.65	16.85	0.01
<i>Treated as exotic</i>	30.31	14.31	0.04
<i>Assumed similarity</i>	23.64	15.64	0.03
<i>Environmental</i>	11.93	17.32	0.02
<i>Workplace</i>	6.37	17.45	0.05
<i>School</i>	27.96	15.96	0.04

Table 16.

Means for Microaggression frequency for Total Sleep Duration in Hours

	Mean	SD
No occurrences	7.16	2.46
One occurrence	9.64	1.07
Two occurrences	9.24	1.14
Three occurrences	6.34	2.43
Four occurrences	3.95	2.69

Table 17.

Means for Total Time Asleep in Hours

	Mean for Yes	Mean for No	Partial η^2
<i>Assumed inferiority</i>	8.67	8.35	0.00
<i>Surprised at success</i>	5.33	8.76	0.13
<i>Second class citizen</i>	8.46	8.37	0.00
<i>Assumed criminality</i>	7.41	8.41	0.00
<i>Colorblind</i>	10.70	8.32	0.02
<i>Invalidated</i>	8.11	8.40	0.00
<i>Treated as exotic</i>	-1.43	9.96	0.41
<i>Assumed similarity</i>	6.18	8.67	0.05
<i>Environmental</i>	8.28	8.40	0.00
<i>Workplace</i>	11.53	8.05	0.09
<i>School</i>	7.48	8.43	0.01

Table note: the estimation of means with a small number of data points produced a statistical artifact for “*treated as exotic*” which resulted in an estimated negative amount of sleep, which is not possible and is uninterpretable.

Appendix A: Pittsburg Sleep Quality Index

Name _____

Date _____

Sleep Quality Assessment (PSQI)

What is PSQI, and what is it measuring?

The Pittsburgh Sleep Quality Index (PSQI) is an effective instrument used to measure the quality and patterns of sleep in adults. It differentiates "poor" from "good" sleep quality by measuring seven areas (components): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction over the last month.

INSTRUCTIONS:

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

During the past month,

1. When have you usually gone to bed? _____
2. How long (in minutes) has it taken you to fall asleep each night? _____
3. What time have you usually gotten up in the morning? _____
4. A. How many hours of actual sleep did you get at night? _____
 B. How many hours were you in bed? _____

5. During the past month, how often have you had trouble sleeping because you	Not during the past month (0)	Less than once a week (1)	Once or twice a week (2)	Three or more times a week (3)
A. Cannot get to sleep within 30 minutes				
B. Wake up in the middle of the night or early morning				
C. Have to get up to use the bathroom				
D. Cannot breathe comfortably				
E. Cough or snore loudly				
F. Feel too cold				
G. Feel too hot				
H. Have bad dreams				
I. Have pain				
J. Other reason (s), please describe, including how often you have had trouble sleeping because of this reason (s):				
6. During the past month, how often have you taken medicine (prescribed or "over the counter") to help you sleep?				
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?				
8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?				
9. During the past month, how would you rate your sleep quality overall?	Very good (0)	Fairly good (1)	Fairly bad (2)	Very bad (3)

Scoring

- | | | |
|--------------------|--|----------|
| Component 1 | #9 Score | C1 _____ |
| Component 2 | #2 Score (<15min (0), 16-30min (1), 31-60 min (2), >60min (3))
+ #5a Score (if sum is equal 0=0; 1-2=1; 3-4=2; 5-6=3) | C2 _____ |
| Component 3 | #4 Score (>7(0), 6-7 (1), 5-6 (2), <5 (3)) | C3 _____ |
| Component 4 | (total # of hours asleep) / (total # of hours in bed) x 100
>85%=0, 75%-84%=1, 65%-74%=2, <65%=3 | C4 _____ |
| Component 5 | # sum of scores 5b to 5j (0=0; 1-9=1; 10-18=2; 19-27=3) | C5 _____ |
| Component 6 | #6 Score | C6 _____ |
| Component 7 | #7 Score + #8 score (0=0; 1-2=1; 3-4=2; 5-6=3) | C7 _____ |

Add the seven component scores together _____ Global PSQI _____

**A total score of "5" or greater is indicative of poor sleep quality.
 If you scored "5" or more it is suggested that you discuss your sleep habits with a healthcare provider**

Appendix B: Sleep Hygiene Index

Sleep Hygiene Index						
Please rate all of the following statements using the scale below.						
<p>5 Always 4 Frequently 3 Sometimes 2 Rarely 1 Never</p>						
						1=Never
					2=Rarely	
				3=Sometimes		
			4=Frequently			
		5=Always				
Sleep Hygiene Index						
Please circle the letters or blacken the box by using the scale above.						
1.	I take daytime naps lasting two or more hours.	5	4	3	2	1
2.	I go to bed at different times from day to day.	5	4	3	2	1
3.	I get out of bed at different times from day to day.	5	4	3	2	1
4.	I exercise to the point of sweating within one hour of going to bed.	5	4	3	2	1
5.	I stay in bed longer than I should two or three times a week.	5	4	3	2	1
6.	I use alcohol, tobacco, or caffeine within four hours of going to bed or after going to bed.	5	4	3	2	1
7.	I do something that may wake me up before bedtime (for example: play video games, use the internet, or clean).	5	4	3	2	1
8.	I go to bed feeling stressed, angry, upset, or nervous.	5	4	3	2	1
9.	I use my bed for things other than sleeping or sex (for example: watch television, read, eat, or study).	5	4	3	2	1
10.	I sleep on an uncomfortable bed (for example: poor mattress or pillow, too much or not enough blankets).	5	4	3	2	1
11.	I sleep in an uncomfortable bedroom (for example: too bright, too stuffy, too hot, too cold, or too noisy).	5	4	3	2	1
12.	I do important work before bedtime (for example: pay bills, schedule, or study).	5	4	3	2	1
13.	I think, plan, or worry when I am in bed.	5	4	3	2	1

Appendix C. Perceived Ethnic Discrimination Questionnaire – Community Version

PEDQ – Community Version

Think about your ethnicity/race. What group do you belong to? Do you think of yourself as: Asian? Black? Latino? White? Native American? American? Caribbean? Irish? Italian? Korean? Another group?

YOUR ETHNICITY/RACE: _____

How often have any of the things listed below happened to you, because of your ethnicity?

BECAUSE OF YOUR ETHNICITY/RACE ...

A. How often... Never Sometimes Very
Often

1. Has someone said something disrespectful, either to your face or behind your back?

1 2 3 4 5

2. Have you been kept out of a public place or group? 1 2 3 4 5

3. Have you been treated unfairly by teachers, principals, or other staff at school?

1 2 3 4 5

4. Have others thought you couldn't do things or handle a job?

1 2 3 4 5

5. Have others threatened to hurt you (ex: said they would hit you)?

1 2 3 4 5

6. Have others actually hurt you or tried to hurt you (ex: kicked or hit you)?

1 2 3 4 5

7. Have others avoided talking to you or answering you? 1 2 3 4 5

8. Have you felt that you were kept out of certain places? 1 2 3 4 5

9. Have policemen or security officers been unfair to you? 1 2 3 4 5

BECAUSE OF YOUR ETHNICITY/RACE...

How often... Never Sometimes Very often

10. Have others hinted that you are stupid? 1 2 3 4 5

11. Have others threatened to damage your property? 1 2 3 4 5

12. Have others actually damaged your property? 1 2 3 4 5

13. Have people called you bad names related to your ethnicity?

1 2 3 4 5

14. Have others made you feel like an outsider who doesn't fit in because of your dress, speech, or other characteristics related to your ethnicity? 1 2 3 4 5

15. Were you left out when others were planning a party or get-together?

1 2 3 4 5

16. Have you been treated unfairly by co-workers or classmates?

1 2 3 4 5

17. Have others hinted that you are dishonest or can't be trusted?
1 2 3 4 5
18. Has someone made rude gestures? 1 2 3 4 5
19. Have others avoided touching or sitting next to you (ex: in class or on a bus)?
1 2 3 4 5
20. Have you been left out of social gatherings or get-togethers (ex: going to lunch or to a bar)?
1 2 3 4 5
21. Have people like waiters, bank tellers, or secretaries been unfair or treated you badly?
1 2 3 4 5
- BECAUSE OF YOUR ETHNICITY/RACE...
- How often... Never Sometimes Very often
22. Has a clerk or waiter ignored you or made you wait longer than others to be served?
1 2 3 4 5
23. Have people been nice to you to your face, but said bad things about you behind your back?
1 2 3 4 5
24. Have people who speak a different language made you feel like an outsider?
1 2 3 4 5
25. Have people on the street been unwilling to help you or give you directions?
1 2 3 4 5

26. Has a taxi driver passed you by or refused you service? 1 2 3 4 5
27. Have others hinted that you must be violent or dangerous?
1 2 3 4 5
28. Have others physically harmed members of your family? 1 2 3 4 5
29. Have others ignored you or not paid attention to you? 1 2 3 4 5
30. Has your boss or supervisor been unfair to you? 1 2 3 4 5
31. Have others hinted that you must not be clean? 1 2 3 4 5
32. Have people not trusted you? 1 2 3 4 5
33. Have people not taken you seriously or not wanted to give you responsibility?
1 2 3 4 5
34. Has it been hinted that you must be lazy? 1 2 3 4 5

Appendix D: Racial and Ethnic Microaggressions Scale

Racial and Ethnic Microaggressions Scale (REMS)
Kevin L. Nadal, Ph.D.
John Jay College of Criminal Justice- City University of New York

Instructions: Think about your experiences with race. Please read each item and think of how many times this event has happened to you in the **PAST SIX MONTHS**.

0 = I did not experience this event.

1 = I experienced this event 1 time in the past six months.

2= I experienced this event 2 times in the past six months.

3= I experienced this event 3 times in the past six months.

4= I experienced this event 4 times in the past six months.

5= I experienced this event 5 or more times.

1. I was ignored at school or at work because of my race.
2. Someone's body language showed they were scared of me, because of my race.
3. Someone assumed that I spoke a language other than English.
4. I was told that I should not complain about race.
5. Someone assumed that I grew up in a particular neighborhood because of my race.
6. Someone avoided walking near me on the street because of my race.
7. Someone told me that she or he was colorblind.
8. Someone avoided sitting next to me in a public space (e.g., restaurants, movie theaters, subways, buses) because of my race.
9. Someone assumed that I would not be intelligent because of my race.
10. I was told that I complain about race too much.
11. I received substandard service in stores compared to customers of other racial groups.
12. I observed people of my race in prominent positions at my workplace or school.
13. Someone wanted to date me only because of my race.
14. I was told that people of all racial groups experience the same obstacles.
15. My opinion was overlooked in a group discussion because of my race.
16. Someone assumed that my work would be inferior to people of other racial groups.
17. Someone acted surprised at my scholastic or professional success because of my race.
18. I observed that people of my race were the CEOs of major corporations.
19. I observed people of my race portrayed positively on television.
20. Someone did not believe me when I told them I was born in the US.
21. Someone assumed that I would not be educated because of my race.
22. Someone told me that I was "articulate" after she/he assumed I wouldn't be.
23. Someone told me that all people in my racial group are all the same.
24. I observed people of my race portrayed positively in magazines.
25. An employer or co-worker was unfriendly or unwelcoming toward me because of my race.
26. I was told that people of color do not experience racism anymore.
27. Someone told me that they "don't see color."
28. I read popular books or magazines in which a majority of contributions featured people from my racial group.

29. Someone asked me to teach them words in my "native language."
30. Someone told me that they do not see race.
31. Someone clenched her/his purse or wallet upon seeing me because of my race.
32. Someone assumed that I would have a lower education because of my race.
33. Someone of a different racial group has stated that there is no difference between the two of us.
34. Someone assumed that I would physically hurt them because of my race.
35. Someone assumed that I ate foods associated with my race/culture every day.
36. Someone assumed that I held a lower paying job because of my race.
37. I observed people of my race portrayed positively in movies.
38. Someone assumed that I was poor because of my race.
39. Someone told me that people should not think about race anymore.
40. Someone avoided eye contact with me because of my race.
41. I observed that someone of my race is a government official in my state
42. Someone told me that all people in my racial group look alike.
43. Someone objectified one of my physical features because of my race.
44. An employer or co-worker treated me differently than White co-workers.
45. Someone assumed that I speak similar languages to other people in my race.

Appendix E: Barratt Simplified Measure of Social Status

The Barratt Simplified Measure of Social Status (BSMSS) Will Barratt, Ph.D.

Circle the appropriate number for your Mother's, your Father's, your Spouse / Partner's, and your level of school completed and occupation. If you grew up in a single parent home, circle only the score from your one parent. If you are neither married nor partnered circle only your score. If you are a full time student circle only the scores for your parents.

<u>Level of School Completed</u>	<u>Mother</u>	<u>Father</u>	<u>Spouse</u>	<u>You</u>
Less than 7 th grade	3	3	3	3
Junior high / Middle school (9 th grade)	6	6	6	6
Partial high school (10 th or 11 th grade)	9	9	9	9
High school graduate	12	12	12	12
Partial college (at least one year)	15	15	15	15
College education	18	18	18	18
Graduate degree	21	21	21	21

Circle the appropriate number for your Mother's, your Father's, your Spouse / Partner's, and your occupation. If you grew up in a single parent home, use only the score from your parent. If you are not married or partnered circle only your score. If you are still a full-time student only circle the scores for your parents. If you are retired use your most recent occupation.

<u>Occupation</u>	<u>Mother</u>	<u>Father</u>	<u>Spouse</u>	<u>You</u>
Day laborer, janitor, house cleaner, farm worker, food counter sales, food preparation worker, busboy.	5	5	5	5
Garbage collector, short-order cook, cab driver, shoe sales, assembly line workers, masons, baggage porter.	10	10	10	10
Painter, skilled construction trade, sales clerk, truck driver, cook, sales counter or general office clerk.	15	15	15	15
Automobile mechanic, typist, locksmith, farmer, carpenter, receptionist, construction laborer, hairdresser.	20	20	20	20
Machinist, musician, bookkeeper, secretary, insurance sales, cabinet maker, personnel specialist, welder.	25	25	25	25
Supervisor, librarian, aircraft mechanic, artist and artisan, electrician, administrator, military enlisted personnel, buyer.	30	30	30	30
Nurse, skilled technician, medical technician, counselor, manager, police and fire personnel, financial manager, physical, occupational, speech therapist.	35	35	35	35
Mechanical, nuclear, and electrical engineer, educational administrator, veterinarian,	40	40	40	40

military officer, elementary, high school and special education teacher,				
Physician, attorney, professor, chemical and aerospace engineer, judge, CEO, senior manager, public official, psychologist, pharmacist, accountant.	45	45	45	45

Level of School Completed Scoring

1	If you grew up with both parents add <u>Mother</u> + <u>Father</u> and divide by 2. If you grew up with one parent enter that score to the right.		
2	If you are married or partnered add <u>Spouse</u> + <u>You</u> and divide by 2. If you live alone enter <u>Your</u> score to the right. If you are a full-time student leave this blank.		
3	Double your score from line 2. If you are a full-time student leave this blank.		
4	If you are a full-time student enter only your parents' score. Add line 1 and line 3 then divide by 3 (three) for a TOTAL EDUCATION Score should be between 3 and 21		

Occupation Scoring

1	If you grew up with both parents add <u>Mother</u> + <u>Father</u> and divide by 2. If you grew up with one parent enter that score to the right.		
2	If you are married or partnered add <u>Spouse</u> + <u>You</u> and divide by 2. If you live alone enter <u>Your</u> score to the right. If you are a full-time student leave this blank.		
3	Double your score from line 2. If you are a full-time student leave this blank.		
4	If you are a full-time student enter only your parents' score. Add line 1 and line 3 then divide by 3 (three) for TOTAL OCCUPATION Score should be between 5 and 45		

TOTAL Score:

Add TOTAL EDUCATION + TOTAL OCCUPATION: Score should be between 8 and 66	
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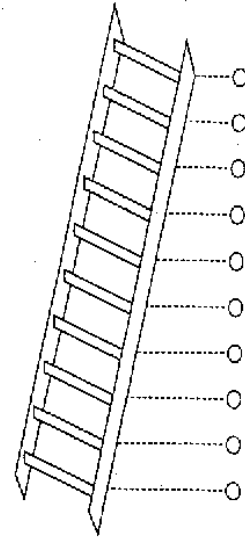
Author contact - will dot barratt at indstate dot edu

Appendix F. MacArthur Scale of Subjective Social Status – Youth Version

1a. Imagine that this ladder pictures how American society is set up.

- ◆ At the top of the ladder are the people who are the best off--they have the most money, the highest amount of schooling, and the jobs that bring the most respect.
- ◆ At the bottom are people who are the worst off--they have the least money, little or no education, no job or jobs that no one wants or respects.

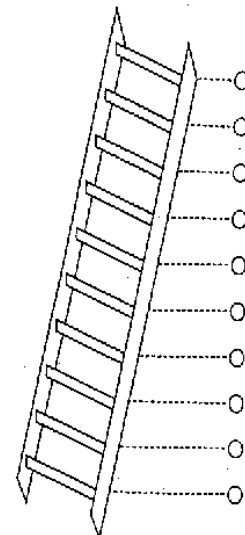
Now think about your family. Please tell us where you think your family would be on this ladder. **Fill in the circle that best represents where your family would be on this ladder.**



1b. Now assume that the ladder is a way of picturing your school.

- ◆ At the top of the ladder are the people in your school with the most respect, the highest grades, and the highest standing.
- ◆ At the bottom are the people who no one respects, no one wants to hang around with, and have the worst grades.

Where would you place yourself on this ladder? **Fill in the circle that best represents where you would be on this ladder.**



Appendix G: Ethnic Identity Scale

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APPENDIX: ETHNIC IDENTITY SCALE

-
1. My feelings about my ethnicity are mostly negative (-A).
 2. I have not participated in any activities that would teach me about my ethnicity (-E).
 3. I am clear about what my ethnicity means to me (+R).
 4. I have experienced things that reflect my ethnicity, such as eating food, listening to music, and watching movies (+E).
 5. I have attended events that have helped me learn more about my ethnicity (+E).
 6. I have read books/magazines/newspapers or other materials that have taught me about my ethnicity (+E).
 7. I feel negatively about my ethnicity (-A).
 8. I have participated in activities that have exposed me to my ethnicity (+E).
 9. I wish I were of a different ethnicity (-A).
 10. I am not happy with my ethnicity (-A).
 11. I have learned about my ethnicity by doing things such as reading (books, magazines, newspapers), searching the internet, or keeping up with current events (+E).
 12. I understand how I feel about my ethnicity (+R).
 13. If I could choose, I would prefer to be of a different ethnicity (-A).
 14. I know what my ethnicity means to me (+R).
 15. I have participated in activities that have taught me about my ethnicity (+E).
 16. I dislike my ethnicity (-A).
 17. I have a clear sense of what my ethnicity means to me (+R).
-

Note. Response options are: Does not describe me at all (1), Describes me a little (2), Describes me well (3), and Describes me very well (4). The notation after each item indicates the relevant subscale (i.e., A = affirmation, E = exploration, and R = resolution); + indicates a positively worded item; - indicates a negatively worded item. Negatively worded items should be reverse scored so that higher scores indicate higher levels of affirmation, exploration, and resolution.

Appendix H: White Racial Identity Scale

II

Black Racial Identity Attitude Scale¹ (Form RIAS-B)

JANET E. HELMS
AND THOMAS A. PARHAM

This questionnaire is designed to measure people's social and political attitudes. There are no right or wrong answers. Use the scale below to respond to each statement. On your answer sheet, blacken the number of the box that describes how you feel.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

1. I believe that being Black is a positive experience.
2. I know through experience what being Black in America means.
3. I feel unable to involve myself in white experiences and am increasing my involvement in Black experiences.
4. I believe that large numbers of Blacks are untrustworthy.
5. I feel an overwhelming attachment to Black people.
6. I involve myself in causes that will help all oppressed people.
7. I feel comfortable wherever I am.

¹To avoid respondent reactivity, the title "Social Attitude Scales" should replace this title when the measure is administered.

1 Strongly Disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly Agree
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				

1 Strongly Disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly Agree
32.	Most Blacks I know are failures.			
33.	I believe that White people should feel guilty about the way they have treated Blacks in the past.			
34.	White people can't be trusted.			
35.	In today's society if Black people don't achieve, they have only themselves to blame.			
36.	The most important thing about me is that I am Black.			
37.	Being Black just feels natural to me.			
38.	Other Black people have trouble accepting me because my life experiences have been so different from their experiences.			
39.	Black people who have any White people's blood should feel ashamed of it.			
40.	Sometimes, I wish I belonged to the White race.			
41.	The people I respect most are White.			
42.	A person's race usually is not important to me.			
43.	I feel anxious when white people compare me to other members of my race.			
44.	I can't feel comfortable with either Black people or White people.			
45.	A person's race has little to do with whether or not he/she is a good person.			
46.	When I am with Black people, I pretend to enjoy the things they enjoy.			
47.	When a stranger who is Black does something embarrassing in public, I get embarrassed.			
48.	I believe that a Black person can be close friends with a White person.			
49.	I am satisfied with myself.			
50.	I have a positive attitude about myself because I am Black.			

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Appendix I: Demographic Questionnaire

Age: _____

What gender do you identify as?

- a) Male
- b) Female
- c) Non-binary
- d) Other/Not listed
- e) Decline to answer

Housing during the academic year?

- a) On-campus
- b) Off-campus alone
- c) Off-campus with parent(s) or guardian(s)
- d) Off-campus with roommate(s)
- e) Off-campus with spouse/partner/children
- f) Other _____

What Race/Ethnicity do you identify with (choose all that apply)?

- a) Asian or Asian American
- b) Black or African American
- c) Hispanic or Latinx
- d) White, Caucasian, Anglo, European American: not Hispanic
- e) American Indian/ Native American
- f) Biracial/Multiracial
- g) Other _____

What is your expected graduation date? _____

College Status

- a) 1st year/freshman (less than 30 credits completed)
- b) Midcareer (sophomore/junior, between 30-90 credits completed)
- c) Senior (90+ credits completed)

Major: _____

Appendix J: Daily Diary

ID #: _____
Starting Week of: _____

COLLEGE STUDENT SLEEP
WEEKLY SLEEP DIARY

Instructions: Please answer the top part of each page when you wake up in the morning. Answer the bottom part of each page before you go to bed at night.

Day of Week (circle): Mon Tues Wed Thurs Fri Sat Sun Date:

ANSWER 1 – 9 WHEN YOU WAKE UP

1. Length of time (minutes) to fall asleep last night after turning the lights out: _____ minutes
2. Number of times I awoke during the night: ___0 ___1 ___2 ___3 ___4+
For a total of _____ minutes
3. Sleep disturbed last night by (you can check more than one): ___Did not awake ___Noise ___Stress/Worried ___Bathroom ___Body aches
___Uncomfortable bed ___Too hot or cold ___Other person ___Other _____
4. Got enough sleep last night? ___No way! Not enough sleep ___Sort of the right amount ___Yes! I slept as much as I needed
5. Overall, my sleep last night was: ___Very poor ___Poor ___Okay ___Good ___Very good
6. Time I woke up today: _____ before noon / after noon (circle one)
7. I was awakened by: ___Alarm ___Noise ___Parent/other person ___Just woke up ___Other _____
8. Time I finally got out of bed today: _____ before noon / after noon (circle one)
9. This morning I feel: ___Very tired ___A little tired ___Somewhat awake and rested ___Wide awake and well-rested

STOP! ... FINISH THE REST OF THE QUESTIONS LATER

ANSWER BEFORE YOU GO TO BED

1. Which of the following did you do today (check all that apply)? ___ School, went to classes ___ School, did other activities like clubs/athletics
___ Did school work alone ___ Did school work with other students ___ Work on or off-campus ___ Chores/family responsibilities
___ Leisure time with family/friends ___ Stayed home sick ___ Stayed home for other reason _____
2. Overall, this is how I felt today: ___Very bad mood ___ Sort of a bad mood ___Pretty good mood ___Very good mood
3. Overall, this is how I felt today: ___Very tired ___A little tired ___Somewhat alert/energetic ___Very alert/energetic
4. Which of the following did you do today? ___Daytime nap 2 hours or more ___Exercise to point of sweating within 1 hour of bed
___ Stayed in bed longer than I should ___Used alcohol within 4 hours of bed ___Used tobacco or caffeine within 4 hours of bed
___ Took medication that might affect sleep (prescription or over-the-counter) ___ Played videogames, used internet, on phone/table 1 hour before bed
___ Did important work before bedtime (studied, pay bills, etc). ___ Did any of these in bed: watch TV, read, eat, study, other
___ Bed/mattress/pillow uncomfortable ___ Bedroom was uncomfortable too hot, too cold, too noisy, etc.
5. Today, another person treated me this way because of my race (check all that apply)
___ Assumed I was inferior: Lower intelligence or education; Poor; Had low-paying job, from particular neighborhood
___ Acted surprised that I was articulate or had academic/professional success
___ Treated me like a second-class citizen: Avoided walking near me; Avoided sitting next to me; Avoided eye contact: Received substandard service
___ Treated me like a criminal: Clenched purse/wallet; Assumed I would hurt them; Body language showed fear
___ Said they were colorblind or "didn't see" color/race
___ Was invalidating (should we say "dismissive"?) of racial issues: Said people should not think about race anymore; Said people of color don't experience racism anymore; Said I shouldn't complain about racism; Said all people experience same obstacles
___ Treated me as exotic: Assumed I spoke language other than English; Asked me to teach words from my "native language;" Wanted to date me only because of my race; Did not believe I was born in USA; Objectified one of my physical features because of my race
___ Assumed similarity: Assumed I spoke the same language as others in my race; Assumed I ate the same foods as others in my race; Said all people in my race look alike; Assumed all people in my race are the same
___ Environmental: Observed people of my race portrayed positively in movies, magazines, or television,
___ Workplace: An employee or coworker was unfriendly or unwelcoming toward me because of my race; My opinion was overlooked in a group discussion because of my race; I was ignored because of my race; Someone assumed that my work would be inferior to people of other racial groups; An employee or co-worker treated me differently than White co-workers.
___ School: A faculty, staff or student was unfriendly or unwelcoming toward me because of my race; My opinion was overlooked in a group discussion because of my race; I was ignored because of my race; Someone assumed that my work would be inferior to people of other racial groups; A faculty, staff, or student treated me differently than White co-workers.
6. Tonight, I got into bed at (time): _____ before midnight / after midnight (circle one)
7. Lights out/tried to fall asleep at (time): _____ before midnight / after midnight (circle one)

STOP!!! END OF DIARY FOR TODAY